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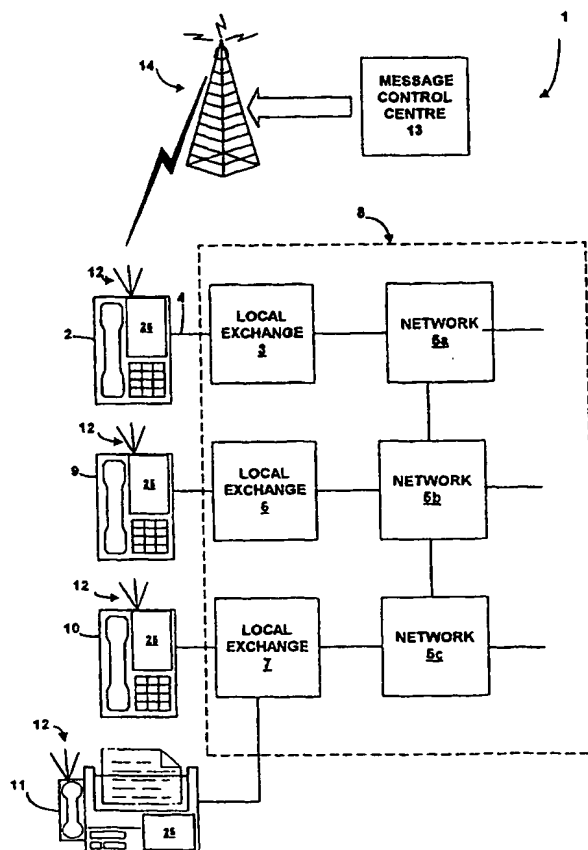
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(57) Abstract

A communications system (1) consists of telephone apparatus including telephones and facsimile machines connected to local exchanges of a public service telephone network (8). Each apparatus (2) is connected to the local exchange by a signal line (4) but also receives broadcast information from a message control centre (13) via radio waves or internet broadcast over a cable network. Each apparatus is provided with a display screen (25) for displaying text and graphic information so that information of interest to the user, such as advertising material, may be broadcast. User specific requirements may be configured into the terminal in the form of identification information which is compared with the identification data of each broadcast message so that only messages having a corresponding identification are stored for subsequent display to the user. The system has use in distributing information to users of telephones and facsimile machines visually to communicate advertising messages and business information.



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TELEPHONE APPARATUS WITH MESSAGE DISPLAY

The present invention relates to telephone apparatus such as telephones and facsimile machines of the type connected to a public service telephone network for making and receiving telephone calls and to such apparatus having message displays.

It is known for telephone apparatus such as telephones and facsimile machines to be connected to signal lines of a public service telephone network so that communications signals may be routed via the network. Telephone calls originating from or received at the telephone apparatus are typically routed via a local exchange connected to one or more networks for inland or overseas calls. Typically a residence or workplace would be provided with telephone sockets into which connection is made by appropriate wiring from the telephone apparatus and signal lines, which may include optical fibre links, provide connection to the local exchange.

It is known for such telephone apparatus to be provided with a display, typically in the form of a liquid crystal display screen, driven by a processor and indicating call number information and optionally date and time information to the user.

It is also known in a pager system for portable pager devices to receive messages from a radio pager transmission via radio waves, typically VHF, and for a pager device to include a liquid crystal display to present a message addressed to a specific pager device or broadcast to a group of pager devices by a paging control centre from which messages are originated on demand by users of the pager system. Typically users contact the paging control centre by telephone and request transmission of a text message to the specified device(s).

It is also known from EP-A-0344672 to provide a public telephone with a display for presenting advertising information and information specifically requested interactively by a user using data stored in the telephone apparatus or transmitted from a remote site. The displayed information may be transmitted via a satellite communication or radio system, enabling the displayed information to be broadcast other than via the telephone lines used by the telephone.

10 It is an object of the present invention to provide an improved telephone apparatus having improved display facilities.

According to the present invention there is disclosed telephone apparatus comprising:

15 (a) communication means operable to make and receive telephone calls for sending and receiving communications signals;

(b) display means operable to present a display of information to a user of the communication means;

20 (c) memory means for storing information to be displayed;

(d) detecting means operable to detect an event associated with use of the communication means; and

25 (e) control means operable to control the display means to present the display of the information stored in the memory means to the user in response to said detection by said detection means.

Preferably the control means is a processor which controls the display means by running a display program which processes display data, both program code and display data being stored in the memory means and updated periodically using broadcast signals. Where the telephone apparatus is a land line telephone or facsimile machine, the broadcast signals may be wireless signals received via an antenna and receiving circuit.

35

Alternatively, the broadcast signals may be received via a network such as the Internet or private data network and input to the apparatus by means of a suitable decoder.

5 Where the telephone apparatus is a mobile telephone, the broadcast signals may be received via a channel of a mobile telephone cellular network. The events which trigger the display of information may be detected as the starting or ending of a telephone call or may be
10 dependent upon detection of digits in the communications signals forming part of dialled telephone numbers, network access codes or call line identification.

Other aspects of the invention are defined in accordance with the appended claims.

15 Preferred embodiments of the present invention will now be described by way of example only and with reference to the accompanying drawings of which:

Figure 1 is a schematic diagram of a communication system including a public service telephone network and
20 having telephone apparatus connected to the network and arranged to receive broadcast information;

Figure 2 is a schematic external plan view of a telephone in accordance with the present invention;

Figure 3 is a schematic diagram of the internal
25 components of the telephone of Figure 2;

Figure 4A is a schematic diagram of the contents of a broadcast message;

Figure 4B is a schematic diagram of the contents of a Random Access Memory containing current message and
30 address information;

Figure 5 is a schematic flowchart illustrating a process for displaying information;

Figure 6 is a schematic flowchart illustrating a method of updating current message data and presentation
35 control data in the Random Access Memory of the terminal;

Figure 7 is an external view of an alternative telephone apparatus;

Figure 8 is an external view of a further alternative apparatus including a graphic display;

5 Figure 8A is a view of an alternative graphic display;

Figure 9 is a schematic diagram of functional components of the telephone apparatus of Figure 8;

10 Figure 10 is a flowchart representing a display control process;

Figure 11 is a flowchart showing a control display process in a route dependent mode; and

Figure 12 is a flowchart showing a display control process in a route independent mode;

15 Figure 13 is a schematic diagram illustrating the broadcasting of messages to a telephone via a cable network;

20 Figure 14 is a schematic diagram illustrating connection of a telephone for receiving broadcast messages via the Internet;

Figure 14A is a schematic diagram illustrating connection of a telephone for receiving broadcast messages via a private data network;

25 Figure 15 is an illustration of a further embodiment including a smart card reader/writer;

Figure 16 is a schematic component diagram of the telephone of Figure 15;

30 Figure 17 is a flowchart illustrating the output of a smart card token using the telephone of Figures 15 and 16;

Figure 18 is a schematic diagram illustrating the broadcast of tokens to the telephone of Figures 15 to 17 via the Internet and a cable network;

35 Figure 19 is a schematic diagram of a mobile telephone having a display of information and connected

to a cellular network;

Figure 20 is a schematic diagram of a routing module having a display of information;

Figure 21 is a schematic flowchart illustrating
5 interactive display of information; and

Figure 22 is a schematic diagram of a facsimile machine in which the display of information is printed.

Figure 1 shows a communications system 1 in which
10 a telephone 2 is connected to local exchange 3 by means of a signal line 4. The local exchange 3 is connected to networks 5a, 5b and 5c and other local exchanges 6 and 7, together forming a public service telephone network 8.

Other telephone apparatus in the form of telephones
15 9 and 10 and facsimile machine 11 are similarly connected to local exchanges 6 and 7 of the public service telephone network.

The telephone 2 is provided with an antenna 12
20 suitable for receiving VHF signals at 153.35 MHz, this being the type of broadcast electromagnetic signals currently used by radio pager transmitters of paging systems. In accordance with the POCSAG standard the transmission encoded using FEC (Forward error coding) of ECH type and interleaving.

25 A control centre 13 generates broadcast information and is connected to a radio tower 14 transmitting the broadcast electromagnetic (VHF) signals to be detected by antenna 12.

Each of the further telephone apparatus 9, 10 and
30 11 is similarly provided with a respective antenna 12.

The external appearance of the telephone 2 is shown in plan view in Figure 2 and consists of a base 20 to which is removably mounted a handset 21 which includes a microphone 22 and speaker 23. The handset 21 is
35 connected to the base 20 via cable (not shown). A key

pad 24 is provided for the user input of telephone numbers.

A display screen 25 is mounted on the base 20 and presents a visible message consisting of a graphic portion 26 and a text portion 27. The display 25 also includes a number display area 28 in which dialled telephone numbers are displayed in conventional manner and a clock display area 29 in which the time of day is indicated.

10 A loudspeaker 30 is also mounted in the base 20.

Figure 3 illustrates the internal structure of the telephone 2 in schematic form. The telephone 2 comprises a two wire to four wire converter 31, the input side of which is connected to a telephone socket 32 via an OFF-hook switch 33. On the telephone socket side of the OFF-hook switch 33, a ringer 34 is positioned between the two wires. The contacts of the OFF-hook switch 33 are closed when the hand set 21 shown in Figure 2 is lifted by the user, thereby creating an OFF-hook event to initiate a telephone call.

On the four wire side of the two wire to four wire converter 31, two wires are connected to the microphone 22 and a further two wires are connected to earpiece speaker 23.

25 A dual tone multi-frequency (DTMF) generator 35 is also connected to the two wire to four wire converter 31 in parallel with the microphone 22, the DTMF generator having its input connected to an output of a processor 36. The processor 36 is also connected to the key pad 24, a ROM 38, a RAM 39 and a clock 40.

A display 41 has its input connected to an output of the processor 36 and has outputs driving the display screen 25 and the loudspeaker 30, these components together providing an information presenting system 43.

35 A demodulator 42 has its input connected to aerial

12. The demodulator 42 has an output connected to a protocol decoder 45 whose output is connected to an input of the processor 36.

5 Operation of the telephone 2 in making a telephone call will now be described. A user initiates a telephone call by lifting the handset 21, this being detected by the OFF-hook switch 33 which connects the two wire to four wire converter 31 to the telephone socket 32 and provides an OFF-hook signal to processor 36. On hearing
10 a dial tone via the earpiece speaker 23, the user then inputs the telephone number of the destination telephone to be called using the key pad 24 which sends the numerical data defining the call number to the processor 36. The processor actuates the DTMF generator which
15 outputs dial tone signals transmitted via the two to four wire converter 31 to the telephone socket 32 for outgoing transmission via the signal line 4. A call is terminated by replacing the handset 21, this being detected by means of the OFF-hook switch 33. The control centre 13
20 transmits the broadcast signals in which the encoded broadcast information has contents as illustrated schematically in Figure 4A. The broadcast message will typically be addressed to a group of telephone apparatus but every message will contain a message address block
25 50 which contains address data which determines whether the telephone 2 is the intended recipient of the message. A presentation control information block 56 contains presentation control information defining the manner in which message data contained in a message data block 55
30 is presented.

 The telephone 2 stores terminal address information
70 in RAM 39, the terminal address information representing an identifier specific to the telephone and also user determined configuration data, and processes
35 only broadcast information containing corresponding

message address data 50.

Figure 6 illustrates schematically the process of updating the current message data and presentation control data in response to received messages. When a broadcast message is detected at step 67 as having been received, the message data 55, presentation control information 56 and message address data 50 are temporarily stored at step 68 in a buffer memory and the address data compared at step 69 with the terminal address information. If there is correspondence between the message address data 50 and the terminal address information 70, the stored current message data 71 and current presentation control information 72 stored in the RAM 39 are updated at step 73 to correspond to the received broadcast message. If there is no correspondence between the terminal address data 70 and the message address data 50 then the current message data and current presentation control information are not updated and remain unchanged.

Figure 4B illustrates schematically the storage in RAM 39 of the current message data 71, current presentation control information 72 and the terminal address data 70. The user may configure operation of the telephone by setting the user configured component of the current terminal address data 70 to any one of a set of available addresses which may for example be comprised of a number of fields indicating leisure interests, professional activities, age and sex of the user so that the user may configure the telephone to present only those messages likely to be of interest.

The telephone therefore presents messages in accordance with the current message data 71 and current presentation control information 72, these being updated periodically whenever a broadcast message having the appropriate address data 50 is received. The user

configured component of the terminal address data may be reconfigured at any time by the user inputting an appropriate command code via the keypad 24 and during this configuration mode the processor 36 may control the display screen 25 to present a menu of options to the user for selection via appropriate input using the keypad 24.

The current presentation control information 72 contains an identifier indicating the nature of the display as being text, audio, video, animated graphic, or a combination thereof. The current presentation control information 72 may also include an identifier indicating that the display is to generate using a display application (the term "display application" is here used to indicate a program or application such as a Java Applet which may be downloaded to the telephone processor to process message data 71 and determine for example a scrolling pattern or image movement to be used in graphic displays). Typically, the display application may be changed periodically to present each set of message data in a corresponding new style, the display apparatus being stored in memory as display program code which is updated by new code included in message data 55 contained in a broadcast message, or a series of broadcast messages containing segments of program code.

The presentation control information block 72 also contains information determining the timing of display of presenting a message such as for example the following options:

- Option 1: display the message when received in real time from the pager message control centre and continue to display until a further message received;
- Option 2: receive and store the message information and display the message for a predetermined time

interval initiated in response to detection of an OFF-hook event when the user initiates a telephone call by lifting the handset;

5 • Option 3: receive and store the message information and initiate the presentation of the message in response to detection of an ON-hook event when a user terminates a telephone call by replacing the handset;

10 • Option 4: receive and store the message information and initiate the presentation of the message in response to detection of an outgoing call being dialled so as to include a specific code, for example a code indicating that the dialled telephone number is an international call from the
15 United Kingdom to the United States, the display message being an advertising message relating to this destination;

20 • Option 5: receive and store the message information and initiate the presentation of the message in response to detection of a call line identifier code contained in an incoming telephone call, the call line identifier providing an indication of the geographical location of the call origin, and the message presented being selected to relate to this
25 geographical location;

 • Option 6: receive and store the message information and initiate the presentation of the message in response to detection of the line state indicating a dialled number to be engaged or unattainable

30 The presentation control information block 72 also contains information determining the time interval during which the message is to be displayed in options 2 and 3 above.

35 The current message data block 71 contains data relating to the information content of message to be

presented by the information presenting system 43 constituted by the display 25, speaker 30, display interface 41, processor 36 and RAM 39 of Figure 3.

Existing paging systems are adapted to transmit
5 alphanumeric messages of a specified maximum. This maximum limit varies by paging standard, protocol and operator but is generally in the region of 240 characters. This may be sufficient for simple text messages to be displayed in an embodiment of the present
10 invention by the information presenting system 43 where for example a moving text message is presented in text portion 27. Longer messages may however be transmitted for storage in the RAM 39 by dividing the message content into a number of portions and forwarding the portions in
15 separate consecutive pager transmissions.

Examples of information to be presented by the information presenting system 43 will now be described. An advertising message may be presented in the display screen 25 of Figure 2 as text in the text portion 27
20 which may be expanded to fill the entire display screen 25. The text message may be scrolled from side to side or up and down during the period for which the message is displayed. The content of the advertising information may for example be to publicise a special offer on
25 telephone calls or current call charges such as "Pathfinder now offers peak time call charges to the United States for 13 pence per minute". As referred to above, the current message is tailored to the requirements of the user, as determined by the
30 configuration data contained in the terminal address information, so that advertising messages can be targeted to appropriate recipients. Other text messages may for example contain trading prices on the stock market presented in the form of a Stock Ticker or other
35 commercial information of specific interest to the user

such as sports results. A further alternative of interactive messages is disclosed below with reference to Figure 21.

5 A second example of presenting information by the information presenting system 43 is to display an animated graphic image in the graphic portion 26 of display 25. If it is not required to simultaneously display text then the graphic portion may expand to fill the whole display screen 25. The graphic display may
10 include text or have a separate text portion 27 as shown in Figure 2.

The graphic display may represent an advertising logo or display other visual graphic information such as a weather chart, or road map.

15 In a third example, the visual display is not required and an audible message is presented via the speaker 30. The message may be encoded in a compact form suitable for driving a speech synthesiser contained in the interface 41. The audible message may include music.

20 A fourth example is an audible message delivered via the earpiece speaker 23, requiring connection between the display interface 41 and the two wires connected to the earpiece speaker 23, this connection being illustrated by connecting wires 44 in Figure 3 which are shown as
25 broken lines representing that this is an alternative option. The display screen 25 may optionally be also controlled via the display interface 41 in this example to display text corresponding to the synthesised speech delivered to the earpiece speaker 23.

30 A procedure for controlling the elapsed time of a display and the time at which the display is initiated is illustrated in Figure 5. It is to be understood that in referring to "display" any of the above examples of presenting a message are to be included as possible
35 alternatives.

In Figure 5 the processor 36 checks at step 60 whether the telephone is in an OFF-hook state, as detected by the OFF-hook switch 33. If the OFF-hook state is detected, the processor checks for any change
5 in status to the ON-hook state. When the ON-hook state is detected at step 62, the display is initiated and a timer started. The elapsed time is measured by means of clock 40 and when the elapsed time has reached a predetermined time interval as determined at step 65, the
10 display is ended at step 66.

A further embodiment will now be described using corresponding references to previous figures where appropriate for corresponding elements.

Figure 7 shows an alternative telephone 2 in which
15 the display is presented solely in the form of text contained in a text portion 27 of the display screen 25, in addition to a number display area 28 and clock display area 29. Text within the text portion 27 is scrolled in a manner determined by a display application stored in
20 RAM 39, the circuit of the telephone of Figure 7 corresponding substantially to that shown in Figure 3. The text portion 27 displays a 2x20 character display of text stored in RAM as stored display data which is periodically updated from broadcast message data in
25 broadcast signals.

The display application controlling the manner in which the text is displayed is similarly defined by stored display program code which is periodically updated using broadcast message data contained in broadcast
30 signals.

Figure 8 illustrates a further embodiment which will be described using corresponding references to those of previous figures where appropriate for corresponding elements. In Figure 8, a telephone 2 includes a display
35 screen 25 which, in response to use of the telephone by

a user to make or receive a telephone call, displays an advertising message in the form of an animated graphic display in a graphic portion 26 of the display screen, the displayed information including a text portion 80.

5 Figure 9 illustrates schematically the functional elements of the apparatus of Figure 8 in which a processor 36 controls operation of both a display 25 and telephone communication circuits 81. The telephone communication circuits 81 correspond generally to the
10 elements 31, 32, 34 and 35 of the circuit of Figure 3 and function to enable telephone calls to be made and received for sending and receiving communications signals 82.

15 A receiver circuit 83 is provided for receiving the input of broadcast signals 84 which are separate and distinct from the communications signals 82 and are received via a separate input 85. The input 85 is connected externally to an interface (not shown) allowing signals from a cable distribution network,
20 internet modem or other means of broadcasting signals which do not require the placing of a telephone call to the telephone 2 itself for the transmission of information.

25 Broadcast signals are "addressed" to specific users by including "address information", i.e. identification data which enables the receiving telephone apparatus to select only information which is relevant to the requirements or preference of the user. The telephone of Figures 8 and 9 includes a memory represented in
30 Figure 9 as RAM 39 and which contains a number of memory areas as represented schematically. A buffer memory 86 is used to initially store all data contained in broadcast signals 84 input to the processor 36 from the receiver circuit 83. Address information contained in
35 the broadcast data stored in the buffer memory is

compared with apparatus ID data 87 and user configuration data 88 which together comprise terminal address data (i.e. stored identifying information) which acts as a filter for selecting only specific broadcast messages.

5 If correspondence is determined between the address information and the apparatus ID data and user configuration data 87 and 88, the information contained in the buffer memory 86 is used to update stored display data 89 and/or stored display program code 90, depending
10 upon the content of the broadcast message data held in the buffer memory 86. The presentation control data 91 stored in RAM 39 may similarly be updated if required together with information contained in a look-up table 92 used for selecting a display program and display data.

15 A detector circuit 93 is represented in Figure 9 as monitoring the status of the telephone communication circuits 81 so as to input to the processor 36 detection signals 94 representative of events associated with use of the telephone communication circuits 81. Such
20 detection may correspond to sensing actuation of the off-hook switch 33 shown in Figure 3 to detect transition between the ON and OFF-hook status of the telephone circuit. The detection signals 94 may also be representative of dialled tones representing telephone
25 numbers or prefixes added to telephone numbers by a low cost routing module 95. The low cost routing module 95 is operable to respond to the telephone number dialled when making an outgoing call by determining a least cost route for choice of network by which the call is to be
30 routed to its destination and to automatically prefix the dialled telephone number with a code determining the least cost route by routing the call to a network node defined by the prefixed code.

The low cost routing module 95 is controlled by the
35 processor 36 which refers to a look-up table 96 in order

to determine the appropriate code for least cost routing.

The data stored in the routing look-up table 96 is also periodically updated by including appropriate data in a broadcast signal received by the receiver circuit 83 and, after being temporarily stored in buffer memory 86 for analysis as to whether updating is appropriate, overwriting part or all of the look up table 96 with the new data received via the broadcast.

Operation of the telephone apparatus 2 of Figures 8 and 9 to present a display will now be described with reference to the flowchart of Figure 10. The processor 36 monitors at step 100 the status of the telephone communication circuits 81 by means of the detector circuit 93 in order to determine whether the telephone communication circuits 81 are being used. When use is detected at step 101, the processor refers at step 102 to the presentation control data 91 stored in the RAM 39 in order to determine the current operating mode. If the current operating mode is one in which the display is dependent upon the network route of an outgoing telephone call, as detected from the initial digits of the dialled code input by the user or as prefixed by the low cost routing module 95, then at step 103 the processor selects operation according to a routine 107 in which the control of the display in a route dependent mode follows the steps of Figure 11.

At step 110 of Figure 11, the processor detects whether the call is an outgoing call and if so, the outgoing number is detected at step 111. At steps 112 and 113, the processor 36 refers to the look-up table 92 to determine pointers to selected display data 89 and selected display program code 90. A display program is thereby selected and run by the processor 36 using the selected display data. In the example shown in Figure 8, the display program is an Applet generating a graphic

picture of an aeroplane and clouds in which text contained in the display data is inserted in text portions 80. Such a display of information is appropriate for example in a case where the detected code of the outgoing call is the telephone number of an airline reservation office. Figure 8A shows a further example of a display appropriate where the detected code of the telephone number is that of a shipping line. In each case, the appropriate text can be an advertising message, perhaps of a competitor, or of a supplier of a related service such as insurance.

In each case, the graphic display is animated to provide both movement of the generated stylised image and to provide scrolling of the text if appropriate.

If at step 110, the processor detects that the call is an incoming call, the call line identifier of the incoming call is detected at step 118. The selected display program and display data are then looked up at steps 112 and 113.

The display is initiated when a cue to start the display is detected at step 114 of Figure 11, the cue being typically the time at which the receiver is replaced into the on-hook condition. Depending upon the current present control data 91 for the given display program, various alternatives are possible including for example a cue which initiates the display when the telephone circuit initially goes OFF-hook.

The display continues to be generated in step 117 until detection at step 105 of Figure 10 of a cue to end the display. The cue to end the display may correspond to determining that elapsed time has reached a preset value measured from commencement of the display.

If at step 103 of Figure 10 the mode of operation of the display control is determined to be other than route dependent, display is controlled at step 106 using

display data and display program data determined in accordance with the presentation control data 91.

Control of the display in a route independent mode is illustrated schematically at Figure 12. In this mode, the processor makes no reference to the dialled telephone number or prefix code, this mode being appropriate for incoming calls as well as outgoing calls where the presentation control data 91 determines that the display is to be independent of the selected route.

At step 120 of Figure 12, the processor 36 monitors the status of the telephone communication circuits 81 to sense the ON/OFF-hook status. When the transition from ON-hook to OFF-hook is detected at step 121, the processor 36 refers to the presentation control data 91 to determine pointers to display data and display program code stored in the RAM in areas 89 and 90 at steps 122 and 123.

At step 124, the processor awaits detection of a cue to commence the display, in this example the cue being a transition from off-hook to on-hook, and the processor then runs the selected display program using the selected display data at step 125.

When a cue to end the display is detected at step 126, the display is ended by the processor at page 127.

Figure 13 illustrates the manner in which the telephone 2 of Figures 8 and 9 may be connected to receive the broadcast signals 84 via a cable network. Figure 13 illustrates schematically a typical connection of the telephone 2 including low cost routing module 95 to a decoder 130 for an optical cable network. The decoder 130 provides decoding of optical signals received from the network to provide a television signal output 131 received by a television receiver 132. The decoder 130 also provides decoding of optical signals to output broadcast signals 84 which are input via the broadcast

signal input 85 shown in Figure 9 to provide updating signals for data stored in memory as described above, thereby enabling both the display functions and the low cost routing module functions to receive updated
5 broadcast information independently of operation of telephone communication signals 82 which are input via a separate input and handled separately by the decoder 130.

The digital data transmitted via the decoder 130 may
10 be packetised data using existing proprietary transmission systems or protocols such as UDP, a one-way transmission protocol which is a derivative of TCP internet protocol. The data transmitted as a multi-point broadcast may be communicated to a local cable network
15 143 as shown in Figure 14 via the internet 141 using an internet service provider 142. The communications signals 82 are routed via the cable network 143 to the public service telephone network 144.

A control centre 145 distributes the broadcast
20 information via the internet 141.

Figure 14A illustrates an alternative arrangement in which a private data network 146 provides communication between a control centre 145 and a local network 143 to which the decoder 130 is connected.

Figure 15 illustrates a further embodiment in which
25 a telephone having the configuration of Figure 9 additionally includes a smart card reader/writer 150 allowing a smart card to be inserted into the telephone 2. The telephone 2 of Figure 15 will be described using
30 corresponding references to those of preceding figures where appropriate for corresponding elements and the description with reference to Figures 9 to 14 applies equally to the embodiment of Figure 15.

Figure 16 illustrates the modified component diagram
35 of the telephone including the smart card reader/writer

connected to processor 36, a smart card 151 being insertable by a user for read/write operation and removable for use in transporting electronic coupons.

Figure 17 illustrates schematically the way in which such a smart card may be utilised. At step 168, a user makes or receives a telephone call using the telephone 2 and at step 169 the processor 36 selects a display message using any of the criteria described above. At step 174, the processor 36 awaits a cue to initiate the display, the cue typically being the termination of the call as detected by the receiver being replaced into the on-hook position so that the on-hook signal serves as a cue. At step 170 a message is displayed, following the cue, to display a graphic message as described above, and including in the message an offer for the user to accept a token or coupon redeemable at a retail outlet.

At step 171, the user inputs via the keypad 24 a response either accepting or declining the offer. At step 172, the processor 36 determines whether the user response requires a token to be output and, if so, outputs at step 173 a write instruction to the smart card writer. The smart card 151 includes an onboard processor and storage medium allowing the information defining the redeemable electronic token to be stored.

The user subsequently removes the smart card 151 from the smart card reader/writer 150 and presents the smart card to a retail or service outlet where, using a further smart card reader/writer connected to the till of the retail or service outlet, the electronic token is redeemed as a discount for goods, services or cash and the data stored in the smart card amended appropriately to cancel or decrement the token value.

In this way, electronics tokens or coupons for merchandising may be broadcast by any of the means described above, including for example wireless

broadcast, internet communication, and cable network.

The broadcast information relating to merchandising tokens or coupons is included in broadcast signals 84 and stored as token data 174 as represented in Figure 16.

5 Figure 18 illustrates the manner in which a telephone having a smart card reader 150 is connected via a cable network 130 to a control centre 145 which originates the broadcast of merchandising tokens. A till 181 at a retail outlet has a corresponding smart card
10 reader/writer 182 into which the user's smart card can be inserted to extract the relevant token data. Redemption of the token is notified by the till 181 to the control centre 145 via any suitable communication link, the control centre serving as a clearing house for
15 electronic token transactions.

Typical use of such a system of broadcasting electronic tokens would involve a service provider such as a supermarket or bank requesting the control centre operator to broadcast information which may include an
20 advertisement, a competition, questions or details, promotional information or questions to which the user can respond by answering a questionnaire. The broadcast signals may be addressed to all users or only to selected users, the selection or filtering process being conducted
25 on the above described basis of identification data contained in broadcast signals being compared with identification information stored in the receiving apparatus. The stored information may be configured according to particular user preference or directed
30 specifically by the control centre to users who make a particular pattern of use of the telephone system. For example, users who frequently make overseas telephone calls are likely to be interested in promotions relating to telephone network service providers offering reduced
35 rates for overseas calls.

The display of the above information is typically via text in the display screen, the text typically being included in a graphic animated form and optionally accompanied by synthesized speech or music.

5 Information relating to the tokens may be continuously displayed or, in the manner described above, displayed in response to use of the telephone communication means.

10 Use of the system in product promotion may for example take the form of displaying a message "press 1 on your telephone keypad if you wish to take advantage of our buy 1 hamburger, get another free offer". This text could be incorporated in a graphic display including the logo of the supplier and a representation of the
15 goods. When the user decides to take advantage of the offer, the user actuates the keypad and the apparatus responds with an appropriate acceptance display and writing token information onto the smart card.

20 The data written onto the smart card may include more information than simply the number or value of the redeemable token. The information may for example include response to a survey or questionnaire, the date and time of the response and identification information.

25 When presented to a retail or service outlet, the smart card is read at a terminal and the discount given to the user, the data on the card being transmitted to the control centre if appropriate.

30 Other forms of transportable memory media may be used in place of a smart card in accordance with the present invention, including re-writable optical data storage media and magnetic data storage media.

A further alternative embodiment in which token data
174 is broadcast and stored in memory 39 relies upon the
token data being presented in a displayed message to the
35 user as an alphanumeric code. The user may then note the

code and present the code information to the retail or service outlet where an operator can obtain verification of the code by referring to locally stored information or by communication with the control centre and, subject
5 to authentication, may then redeem the token. This embodiment does not require the smartcard reader/writer 150 of Figure 16 but otherwise includes all of the elements shown therein.

A unique token identification may be transmitted to
10 each user which the user can then present to the participating sales or service outlets as described above.

Figure 19 illustrates a further embodiment in which the telephone apparatus comprises a mobile telephone 190
15 and which will be described using corresponding reference numerals to those of previous figures where appropriate for corresponding elements. The mobile telephone 190 includes a display 25 which, in addition to displaying the alphanumeric information normally displayed in
20 conventional mobile telephones, is operable to display stored information in a similar manner to the telephone apparatus of the embodiments described above. The mobile telephone 190 includes a keypad 24, a clock 40, read only memory 38 and a random access memory 39 which stores
25 information corresponding to elements 86 to 92 and 96 of Figure 9 described above.

The mobile telephone 190 also includes a transmitter/receiver 191 and a decoder/encoder 192 enabling communications signals 193 to be sent and
30 received by wireless transmission. The mobile telephone 190 may thereby be connected to one or more cellular telephone networks 194 which are in communication with the control centre 145.

Broadcast signals are periodically sent to the
35 mobile telephone 190 as part of broadcast communications

signals 193 in order to update the stored program code 90 and display data 89, lookup tables 96 for routing and user configuration data 88.

5 The mobile telephone 190 may function interactively for display of information as described with reference to Figure 21 and may be used to transmit token data 174 facilitating display of redeemable tokens to the user in the form of displayed token codes.

10 The detection of events for triggering the display may be any of the following;

- turning on the mobile telephone,
- detection of going on-hook status,
- detection of going off-hook status,

15 the user or network access code inserted by a routing function of the processor,

- detection of a line state being engaged,
- detection of a line state being a ringing tone,
- detection of a line state being unattainable, or

20 detection of an incoming call including the possibility of responding to specific call line identification.

Such a mobile telephone 190 would include a larger screen than currently included in conventional mobile
25 telephones and comprising a colour display screen with annotated graphics capability.

Figure 20 illustrates a further embodiment in which a routing module is provided with a display. The term "routing module" is here used to define a telephone
30 apparatus which is connected in-line between a telephone or facsimile machine and the transmission line or network decoder via which telephone calls are transmitted and received. As shown in Figure 20 for example, a conventional telephone 200 is connected to a decoder 130
35 of a cable network via a routing module 201. The routing

module functions to detect telephone numbers of outgoing calls dialled by the user and intelligently adds or alters prefixes to the telephone numbers in order to route the outgoing call via a preferred route which will usually be a least cost route.

The module includes a display 25 corresponding to the display of previous figures and includes a processor and memory providing equivalent functions to those described above.

The routing module 201 receives broadcast signals 202 which are received by the decoder 130 and output separately from communications signals to the module.

Figure 22 illustrates a further alternative in which a facsimile machine 220 having a printer 221 is operable to print received images on a recording medium 222 such as plain paper.

In the example of Figure 22, the facsimile machine 220 is connected to a decoder 130 of a cable network to send and receive communication signals 223.

The facsimile machine 220 includes a processor 36 and memory 39 in similar manner to the apparatus of Figure 9 and functioning to generate data to display an image selected from stored data. The facsimile machine of Figure 22 however does not incorporate a separate display screen but utilises the printer 221 to present the display of information to the user as illustrated by the printed image 224 in Figure 22.

The selection of the displayed information and the cue triggering the initiation of the display may be configured as described above in the various alternative embodiments.

Broadcast signals 225 received via the decoder 130 are used to update the information stored in memory in similar manner to the data updating procedure described above in previous embodiments.

The above described embodiments in which a display of information is presented to a user may optionally be modified to include an interactive display feature illustrated schematically by the flowchart of Figure 21 and which will now be described using corresponding reference numerals to those of preceding figures where appropriate for corresponding elements.

At step 210, the detector circuit 93 detects one of the above described events for triggering the display when a user makes or receives a call. The processor 36 selects the appropriate display program code 90 and presentation control data 91 and awaits the cue to display at step 212.

When the cue is detected, the message is displayed at step 213 requesting a response from the user. As an example, a displayed message contains text stating "book cheap flights to New York using Flight Airways; press # to speak to a Flight Airways representative".

At step 214 the user inputs a response by means of keypad 24, and the response is analysed at step 215 by the processor 36. If action is requested, the processor at step 216 actuates telephone circuits 81 to generate an outgoing telephone call to connect the telephone apparatus with a service provider. The user is thereby automatically connected to an operator to discuss his requirements, without the user having to dial the telephone number.

If at step 215 it is detected that no action is required, the display is ended at step 217 without further action.

A number of alternative embodiments in accordance with the present invention and within the scope of the appended claims are envisaged. For example the display screen in any of the above embodiments may comprise a coloured liquid crystal display to enhance the appearance

of text, video or animated graphics. The display screen optionally may comprise a segmented alphanumeric display.

The handset 21 of the telephone 2 in the above embodiments may be arranged to communicate by radio
5 signal with the base 20 in known manner to avoid the need for a cable connection therebetween. The telephone may alternatively comprise an integral handset as a "one piece" telephone which the OFF-hook switch was a manually actuated ON-OFF switch.

10 The wireless transmitter may alternatively be a satellite based system.

Each of the embodiments of Figure 2 to 18 illustrates telephone apparatus in the form of a conventional telephone receiver. It is to be understood
15 that telephone apparatus in the form of a facsimile machine may similarly incorporate the graphic display, moving text message display and ability to receive and store broadcast messages relating to display, least cost routing and other features of the described telephone
20 apparatus, including for example the addition of the smart card reader/writer for broadcasting electronic coupons or tokens.

In those described embodiments in which updating broadcast information is received via a cable network,
25 the decoder 130 may alternatively output the broadcast memory updating messages for the telephone 2 multiplexed with the television signals 131, the input to the telephone 2 being obtained by means of a T-junction to divert a portion of the signal 131 shown in Figure 13.
30 This modification would require additional decoding circuitry within the telephone 2 in order to demultiplex the signal. In this arrangement, the broadcast message could be included in a vertical blanking interval in the television signal or in any other way appropriate with
35 current television transmission format.

As a further alternative, a television set provided with a satellite dish and decoder box may additionally be provided with means for outputting from the decoder the broadcast messages 84 where the broadcast messages are multiplexed with the satellite transmission of television signals.

It is envisaged that further forms of broadcasting media will become available and to which the present invention is equally applicable, it being necessary only that the telephone apparatus is capable of receiving the broadcast signals independently of any communications signals associated with incoming or outgoing telephone calls.

In each of the above described embodiments, the duration of the display may be determined with reference to an internal clock, the duration of the display having a predetermined value which may be set according to presentation control data received in the broadcast signals.

The processor may additionally refer to the clock in order to customize the selection of displayed information according to the time of day, day of the week, or calendar events.

The selection of display information in route dependent mode has been described above with reference to the detected code of an outgoing call being representative of the telephone number of a specific destination. Alternatively, the detected code may simply be the initial digits of the telephone number determining its route. This may be appropriate where the initial code identifies a particular telecommunications service provider selected by the least cost route module in preference to other service providers on a competitive basis. The displayed message may in such instances indicate to the user the identity of the selected service

provider, an advertising message specific to the service provider, or an advertising message of a competitor.

Reference is made above to the use of DTMF generators in relation to generating outgoing telephone calls. Alternatively, loop disc connections could be
5 used instead of DTMF if this is necessary for communication with the local exchange.

Configuration data has been described above as being input by the user. Configuration data may alternatively
10 be included in broadcast signals on the basis of data prepared centrally, the data being obtained for example from questionnaires completed by the users and provided to the control centre in order to avoid the need for the user to input data to the telephone apparatus itself.
15 Configuration data may be addressed individually to individual telephone apparatus or may be directed to groups of such telephone apparatus in data broadcasts with appropriate addresses.

The use of a Java Applet has been described above
20 in the context of program code downloaded in broadcast signals. As an alternative, a display may utilise a Java Applet which is embedded into the processor 36 or stored in ROM in order to process message data which is broadcast and stored in RAM.

25 Reference is made above to low cost route modules designed to perform call routing based on minimum cost. It is intended that such LCRM modules where referred to in the above description could equally function to perform routing on the basis of criteria other than cost,
30 such as network availability.

CLAIMS

1. Telephone apparatus comprising:

(a) communication means (81) operable to make and receive telephone calls for sending and receiving communications signals (82);

(b) display means (25) operable to present a display of information to a user of the communication means;

(c) memory means (89,90,91) for storing information to be displayed;

(d) detecting means (93) operable to detect an event associated with use of the communication means; and

(e) control means (36) operable to control the display means to present the display of the information stored in the memory means to the user in response to said detection by said detection means.

2. Telephone apparatus as claimed in claim 1 wherein the control means is operable to control operation of the display means by running a display program defined by display program code (90) and which processes display data (89), the program code and the display data being stored in the memory means.

3. Telephone apparatus as claimed in claim 2 comprising receiving means (83) operable to receive broadcast signals (84) other than said communications signals and updating means (36) operable to update the display program code and the display data stored in the memory means in accordance with the broadcast signals.

4. A telephone apparatus as claimed in any preceding claim, wherein the control means is operable to initiate the display of information by the display means in response to detection by said detecting means of the

termination of a telephone call by the communication means.

5 5. A telephone apparatus as claimed in any preceding claim, wherein the control means is operable to initiate the display of information by the display means in response to detection by said detecting means of the commencement of a telephone call by the communication means.

10

6. A telephone apparatus as claimed in any of claims 1 to 3 wherein the control means is operable to initiate the display of information in response to detection by said detection means of a predetermined line status of a communication channel to which the communication means is connected in use.

15

7. A telephone apparatus as claimed in any preceding claim comprising a clock (40) and wherein the control means is operable to end the display of information when elapsed time measured by the clock since initiation of the display is equal to a predetermined period.

20

8. A telephone apparatus as claimed in claim 3, wherein the receiving means is operable to receive the broadcast signals transmitted by a wireless transmitter.

25

9. A telephone apparatus as claimed in claim 8, wherein the receiving means comprises an antenna for receiving wireless transmissions.

30

10. A telephone apparatus as claimed in claim 3 wherein the receiving means is operable in use to receive signals from a decoder of a network.

35

11. A telephone apparatus as claimed in claim 3, comprising identification information storing means (87,88) operable to store identification information associated with the telephone apparatus;

5 further comprising comparing means (36) operable to compare identification data contained in the broadcast signals with the stored identification information; and storage selecting means (36) operable to select for storing in said memory means only broadcast signals for
10 which the identification data in the broadcast signals correspond to stored identification information.

12. A telephone apparatus as claimed in claim 11 comprising configuring means (24,36) responsive to user
15 selection and operable to configure the stored identifying information whereby the memory means may selectively be updated with a selected one or more types of information to be displayed.

20 13. A telephone apparatus as claimed in claim 12 wherein the configuring means comprises a keypad (24) of the terminal operable in response to user actuation to input configuring data (88) to the storing means.

25 14. A telephone apparatus as claimed in claim 11 wherein the control means is operable to configure the stored identifying information in accordance with configuring data received via said receiving means whereby the memory means may thereafter be selectively updated with a one
30 or more types of information to be displayed selected in accordance with said configuring data.

15. A telephone apparatus as claimed in any of claims 11 to 13 comprising a buffer memory for storing received
35 broadcast signals, wherein the comparing means is

operable to compare identification data in the buffer memory with identification information stored in the memory means.

5 16. A telephone apparatus as claimed in any preceding claim, wherein the memory means is operable to store presentation control data (91) defining a mode in which the information is displayed, the control means being further operable to control the display means to display
10 the message information in any one of a plurality of modes in dependence upon the presentation control data.

17. A communications terminal as claimed in claim 18, wherein the presentation control data determines the
15 timing relative to event detection at which the display of information commences and the duration thereof.

18. A telephone apparatus as claimed in claim 16, wherein the memory means is operable to store
20 presentation control data defining the manner in which alphanumeric data is scrolled.

19. A telephone apparatus as claimed in any preceding claim, wherein the communication means comprises a
25 telephone (81).

20. A telephone apparatus as claimed in any of claims 1 to 18, wherein the communication means comprises a facsimile machine (11).

30 21. A telephone apparatus as claimed in any preceding claim comprising a mobile telephone in which said communication means is operable to send and receive telephone calls by wireless transmission of said
35 communications signals.

22. A telephone apparatus as claimed in any of claims 1 to 20 comprising a call routing module wherein said communication means is operable to prefix dialled telephone numbers from an external device with network selection codes and to output said communication signals including the network selection codes and dialled telephone numbers.

23. A telephone apparatus as claimed in any of claims 19 to 22, wherein the display means comprises a display screen housed integrally with the communication means.

24. A telephone apparatus as claimed in claim 19, wherein the display means is operable to present an audible message via an earpiece speaker (23) of the telephone.

25. A telephone apparatus as claimed in claim 1 comprising printing means for printing images received in said communications signals on a recording medium and wherein said display means is constituted by said printing means, said control means being operable to control said printing means to display the stored information as a printed image.

26. A telephone apparatus as claimed in any preceding claim comprising display selecting means (36,92) operable to select the information to be displayed from stored information to be displayed.

27. A telephone apparatus as claimed in claim 26 comprising a clock (40) wherein said display selecting means is operable to select information for display in dependence upon at least one of a time of day, a day of the, and a calender event.

28. A telephone apparatus as claimed in claim 25 wherein the memory means stores program code defining a plurality of display programs and display data defining a plurality of messages, the display selecting means (36,92) being
5 operable to select a selected display program and a selected message therefrom to constitute the selected display of information.

29. A telephone apparatus as claimed in any of claims
10 26 to 28 comprising code detecting means (83) operable to detect a code defining at least part of a telephone number of a telephone call processed by said communication means and wherein the display selecting means is responsive to the detected code to select the
15 selected display of information.

30. A telephone apparatus as claimed in claim 29 wherein the display selecting means comprises a look up table (92) for selecting the selected display program and the
20 selected message according to the detected code.

31. A telephone apparatus as claimed in claim 30 wherein the detected code is representative of a call line identification defining the origin of a received
25 telephone call.

32. A telephone apparatus as claimed in claim 30 wherein the detected code is representative of a portion of a dialled telephone number responsive to user actuation of
30 input means.

33. A telephone apparatus as claimed in any of claims 29 to 32 wherein the memory means stores a decision table (96) defining prefix codes to be added to telephone
35 numbers of outgoing calls and wherein the communication

means is operable to prefix user generated dialled numbers with a selected prefix code determined by the control means with reference to the decision table.

5 34. A telephone apparatus as claimed in claim 33 wherein the code detecting means detects the prefix code determined by the control means with reference to the decision table.

10 35. A telephone apparatus as claimed in any preceding claim comprising output means for outputting data to a transportable memory medium.

15 36. A telephone apparatus as claimed in claim 35 wherein the memory means stores token data representative of redeemable electronic tokens and means for transferring electronic tokens to the transportable memory medium.

20 37. A telephone apparatus as claimed in any of claims 35 and 36 wherein the output means comprises a smart card terminal operable to output electronic tokens to a smart card constituting said transportable memory medium.

25 38. A telephone apparatus as claimed in any of claims 35 to 37 comprising means for receiving and storing broadcast signals representative of said token data.

30 39. A telephone apparatus as claimed in claim 2, wherein the display data comprises at least one of alphanumeric data, speech synthesis data, video data, graphic data and graphic animation data.

40. A method of operating a telephone apparatus comprising:

35 (a) operating a communication means (81) to make

and receive telephone calls for sending and receiving communications signals (82);

(b) operating a display means (25) to present a display of information to a user of the communication means;

(c) storing information to be displayed in a memory means (89,90,91);

(d) detecting an event associated with use of the communication means; and

(e) controlling the display means to present the display of the information stored in the memory means to the user in response to said detection.

41. A method as claimed in claim 40 wherein operation of the display means is controlled by running a display program defined by display program code (90) and which processes display data (89), the program code and the display data being stored in the memory means.

42. A method as claimed in claim 41 comprising receiving broadcast signals (84) other than said communications signals and updating the display program code and the display data stored in the memory means in accordance with the broadcast signals.

43. A method as claimed in any of claims 40 to 42, wherein the display means is controlled to initiate the display of information in response to detection of the termination of a telephone call by the communication means.

44. A method as claimed in any of claims 40 to 42, wherein the display means is controlled to initiate the display of information in response to detection of the commencement of a telephone call by the communication

means.

45. A method as claimed in any of claims 40 to 42
wherein the display means is controlled to initiate the
5 display of information in response to detection of a
predetermined line status of a communication channel to
which the communication means is connected.

46. A method as claimed in any of claims 40 to 45
10 wherein the display means is controlled to end the
display of information when elapsed time since initiation
of the display is equal to a predetermined period.

47. A method as claimed in claim 42, wherein the
15 received broadcast signals are signals transmitted by a
wireless transmitter.

48. A method as claimed in claim 42 wherein the received
broadcast signals are received from a decoder of a
20 network.

49. A method as claimed in any of claims 42 and 48 claim
42 wherein the received signals are broadcast via one of
25 (a) the internet;
(b) a private data network; and
(c) a cable network.

50. A method as claimed in any of claims 42, 48 and 49,
comprising storing identification information associated
30 with the telephone apparatus;

comparing identification data contained in the
broadcast signals with the stored identification
information; and

selecting for storing in said memory means only
35 broadcast signals for which the identification data in

the broadcast signals correspond to stored identification information.

51. A method as claimed in claim 50 comprising
5 configuring the stored identifying information responsive to user selection whereby the memory means is thereafter selectively updated from the broadcast signals with a selected one or more types of information to be displayed.

10

52. A method as claimed in claim 50 wherein the stored identifying information is configured in accordance with configuring data (88) received in said broadcast signals whereby the memory is thereafter selectively updated with
15 one or more types of information to be displayed selected in accordance with said configuring data.

53. A method as claimed in any of claims 50 to 52 comprising storing received broadcast signals in a buffer
20 memory (86) and wherein the comparing step comprises comparing identification data in the buffer memory with identification information stored in the memory means.

54. A method as claimed in any of claims 40 to 53,
25 wherein the memory means stores presentation control data (91) defining a mode in which the information is displayed, the display means being controlled to display the message information in any one of a plurality of modes in dependence upon the presentation control data.

30

55. A method as claimed in claim 54, wherein the presentation control data determines the timing relative to event detection at which the display of information commences and the duration thereof.

35

40

56. A method as claimed in claim 54, wherein the memory means stores presentation control data defining the manner in which alphanumeric data is scrolled.

5 57. A method as claimed in claim 40 wherein said communication means sends and receives telephone calls by wireless transmission of said communications signals.

10 58. A method as claimed in claim 57 wherein the communications signals provide communication via at least one digital cellular network.

15 59. A method as claimed in claim 58 comprising receiving broadcast signals via a channel of said digital cellular network and updating the display program code and the display data stored in the memory means in accordance with the broadcast signals.

20 60. A method as claimed in any of claims 40 to 56 wherein the communication means comprises a call routing module wherein said communication means prefixes dialled telephone numbers received from an external device with network access codes and outputs said communication signals including the network access codes and dialled
25 telephone numbers.

61. A method as claimed in any of claims 40 to 60, wherein the display means additionally presents an audible message.

30

62. A method as claimed in any of claims 40 to 61 comprising the step of selecting the information to be displayed from stored information to be displayed providing more than one option for presenting a display
35 of information.

63. A method as claimed in claim 62 wherein the memory means stores program code defining a plurality of display programs and display data defining a plurality of messages, the display selecting step selecting a selected
5 display program and a selected message therefrom to constitute the selected display of information.

64. A method as claimed in any of claims 62 and 63 comprising detecting a code defining at least part of a
10 telephone number of a telephone call processed by said communication means and wherein the display selecting step is responsive to the detected code to select the selected display of information.

15 65. A method as claimed in claim 64 wherein the display selecting step comprises using a look up table (92) to select the selected display program and the selected message according to the detected code.

20 66. A method as claimed in any of claims 64 and 65 wherein the detected code is representative of a call line identification defining the origin of a received telephone call.

25 67. A method as claimed in any of claims 64 and 65 wherein the detected code is representative of a portion of a user dialled telephone number.

30 68. A method as claimed in any of claims 64 to 67 wherein the memory means stores a decision table (96) defining prefix codes to be added to telephone numbers of outgoing calls and wherein the communication means prefixes user generated dialled numbers with a selected prefix code determined with reference to the decision
35 table.

69. A method as claimed in claim 68 wherein the prefix code determined with reference to the decision table is detected to determine the selection of display information.

5

70. A method as claimed in any of claims 40 to 69 wherein the display of information comprises code representative of a redeemable token for enabling the user to redeem the token by reference to the code at a retail or service outlet.

10

71. A method as claimed in any of claims 40 to 69 comprising outputting data representative of redeemable electronic tokens to a transportable memory medium.

15

72. A method as claimed in claim 71 comprising receiving and storing broadcast signals representative of said token data.

73. A method as claimed in any of claims 40 to 72 wherein the displayed information elicits a response from the user, including the further step of receiving a response input from the user and displaying further information responsive to the user response input.

20
25

74. A method as claimed in claim 73 including the step of generating a communication signal responsive to the user response input.

75. A method as claimed in claim 74 wherein the communication signal is generated using a telephone number stored in the memory means in association with the displayed information.

76. Telephone apparatus comprising:

30
35

43

(a) communication means (81) operable to make and receive telephone calls for sending and receiving communications signals (82);

(b) display means (25) operable to present a display of information to a user of the communication means;

(c) memory means (89,90,91) for storing information to be displayed; and

(d) control means (36) operable to control the operation of the display means by running a display program defined by display program code (90) and which processes display data (89), the program code and the display data being stored in the memory means.

77. A method as claimed in claim 40 comprising printing images received in said communications signals on a recording medium and where said display of stored information is constituted by further printing the stored information as a printed image.

20

78. A communication system comprising a public service telephone network;

a set of telephone apparatus units connected to signal lines of the network for making and receiving telephone calls for sending and receiving communications signals;

a broadcast system operable to broadcast signals other than the communication signals containing message information; and wherein each of the set of telephone apparatus units comprises a respective receiver operable to receive the broadcast signals and a respective information display system operable to display a broadcast message to a user of the telephone apparatus in accordance with the broadcast message information.

35

79. Telephone apparatus comprising;

communication means (81) operable to make and receive telephone calls for sending and receiving communications signals (82);

5 receiving means (83) operable to receive broadcast signals (84) other than said communications signal, said broadcast signals being representative of redeemable electronic tokens;

10 memory means (174) for storing token data representative of said redeemable electronic tokens; and
output means for outputting token data representative of said redeemable electronic tokens to a transportable memory medium.

15 80. Telephone apparatus as claimed in claim 79 wherein the output means comprises a smart card terminal.

81. A method of providing discounts on at least one of a product and a service provided at a retail outlet and
20 service outlet respectively;

the method comprising;

broadcasting redeemable electronic tokens in broadcast signals to telephone apparatus units having receiving means for receiving the broadcast signals;

25 storing the tokens in the telephone apparatus units;
transferring the tokens to transportable memory media inserted into terminals of the telephone apparatus units;

transporting the media to the outlet;

30 reading the tokens at a terminal of the outlet; and
providing the discounts associated with the tokens.

82. A method as claimed in claim 81 wherein the discount comprises a cash payment.

1/22

Fig 1

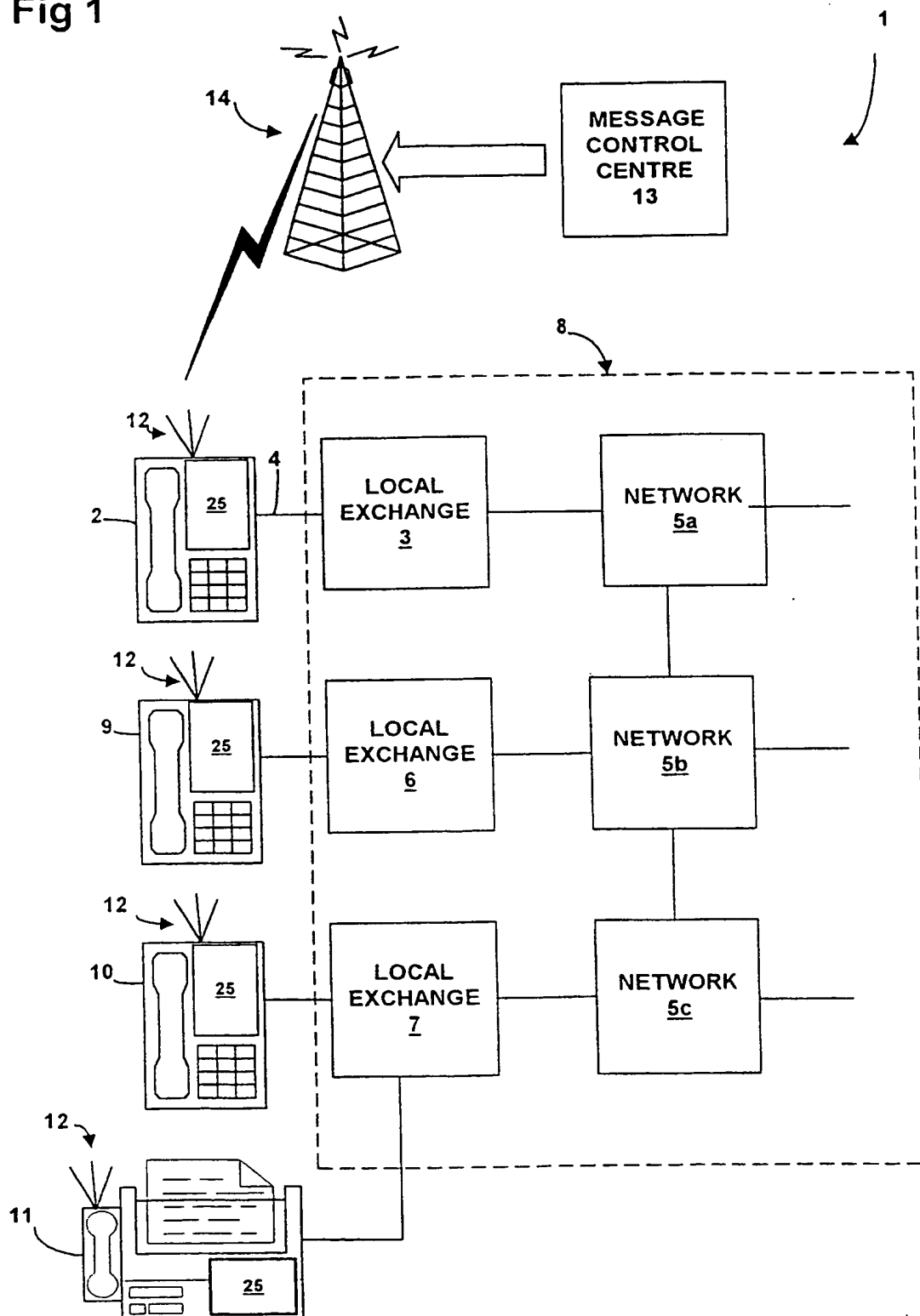
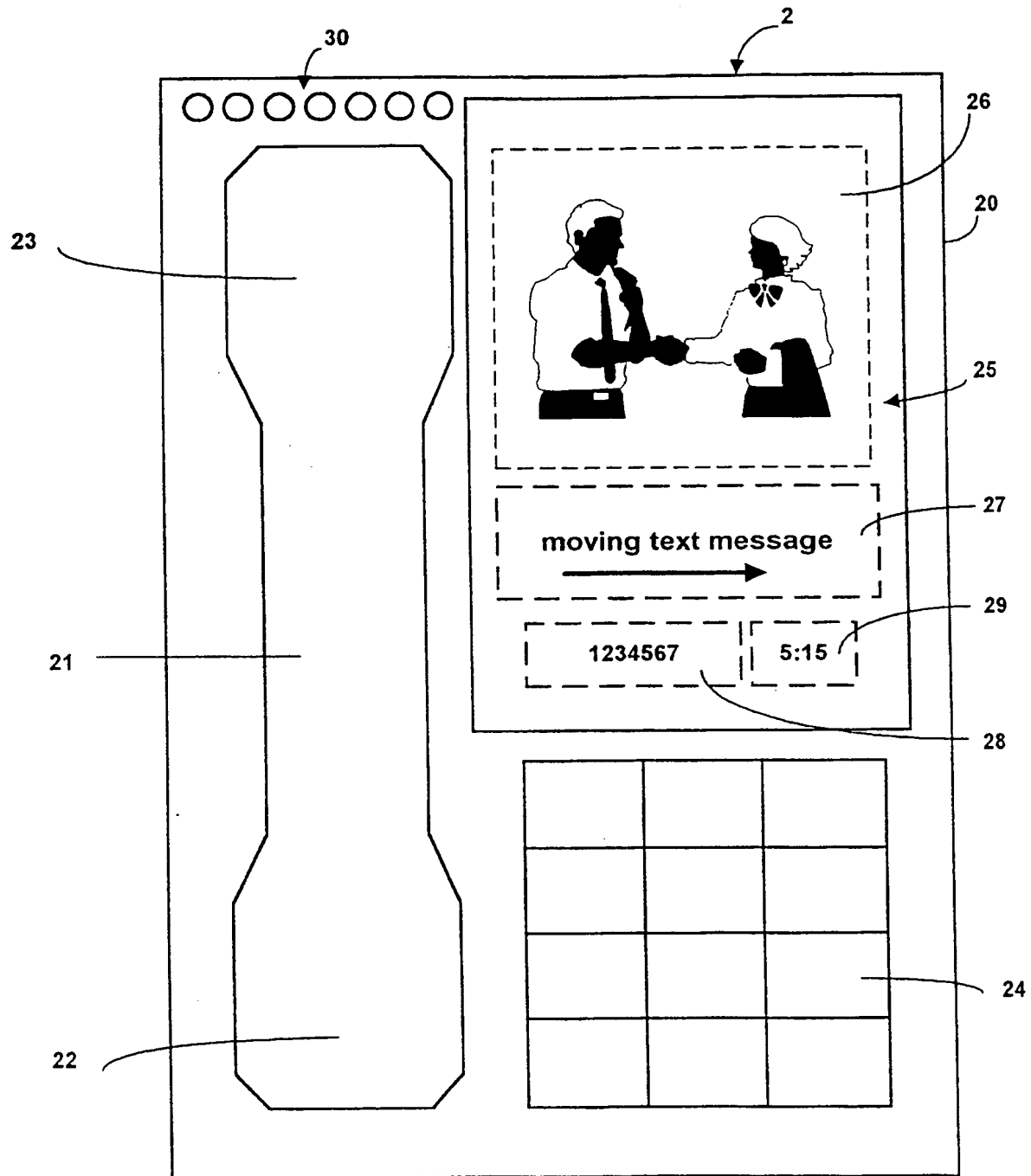


Fig 2



3/22

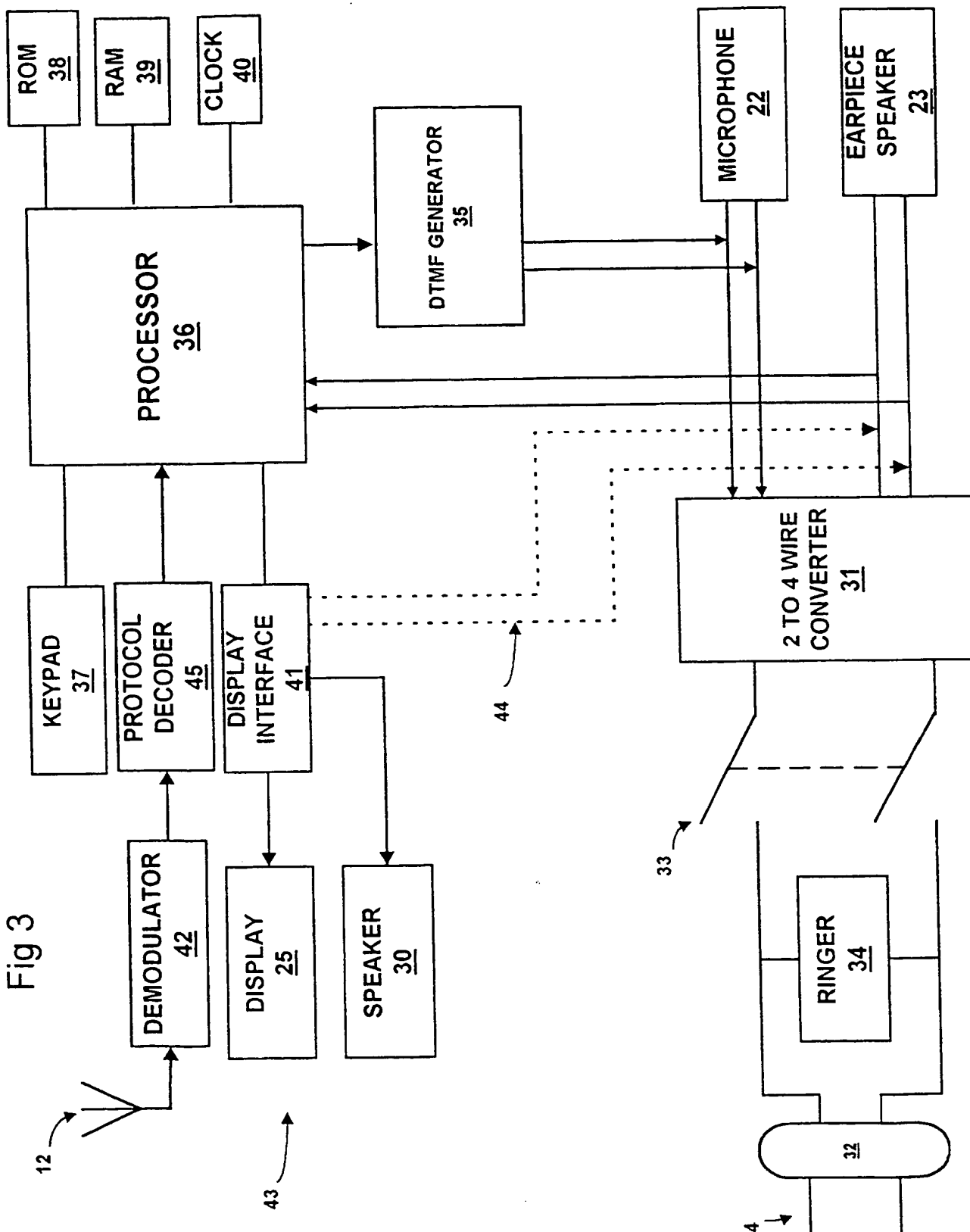


Fig 4A

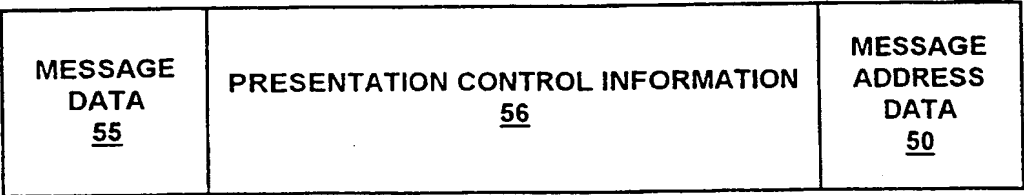
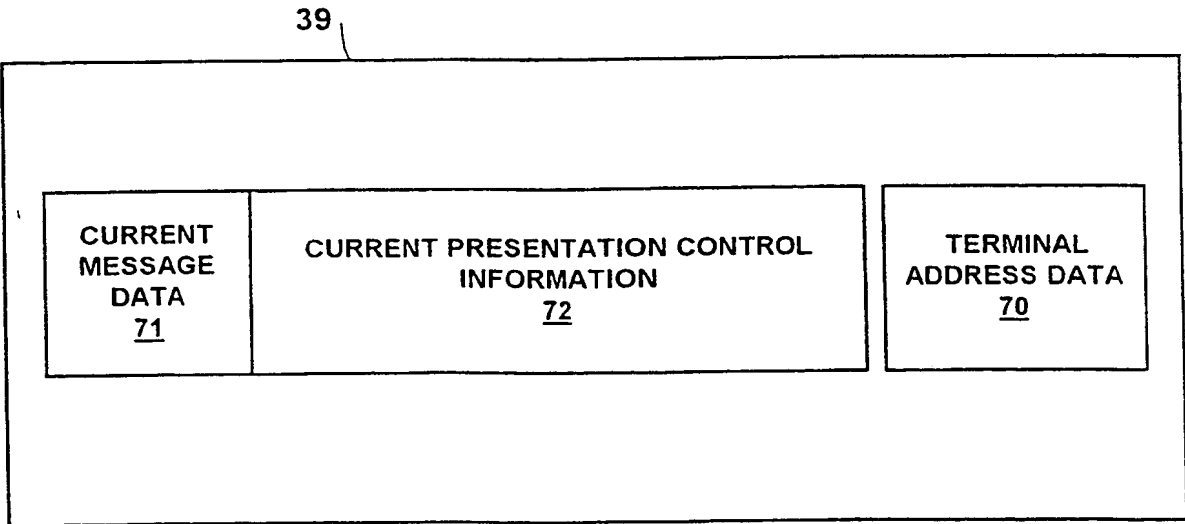
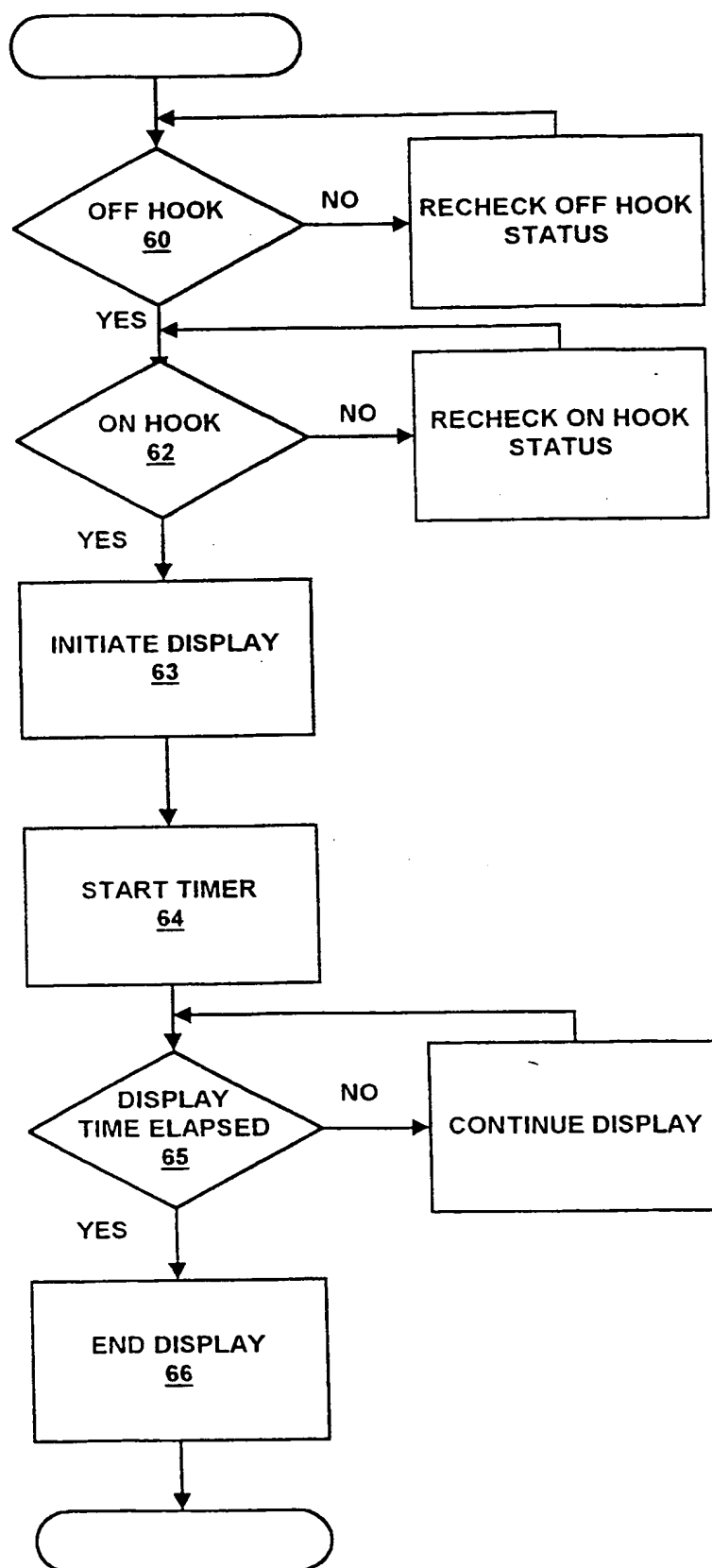


Fig 4B



5/22

Fig 5



6/22

Fig 6

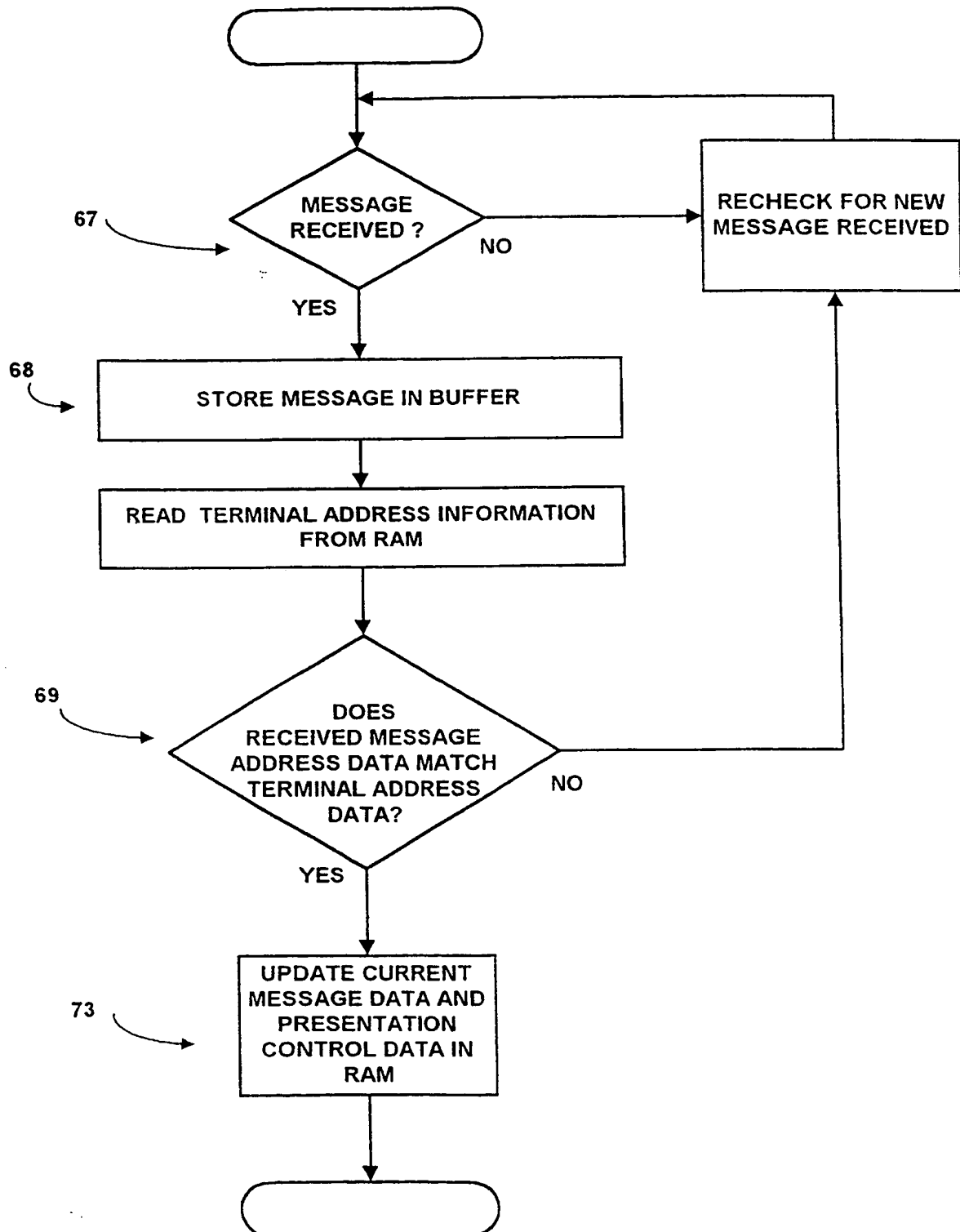
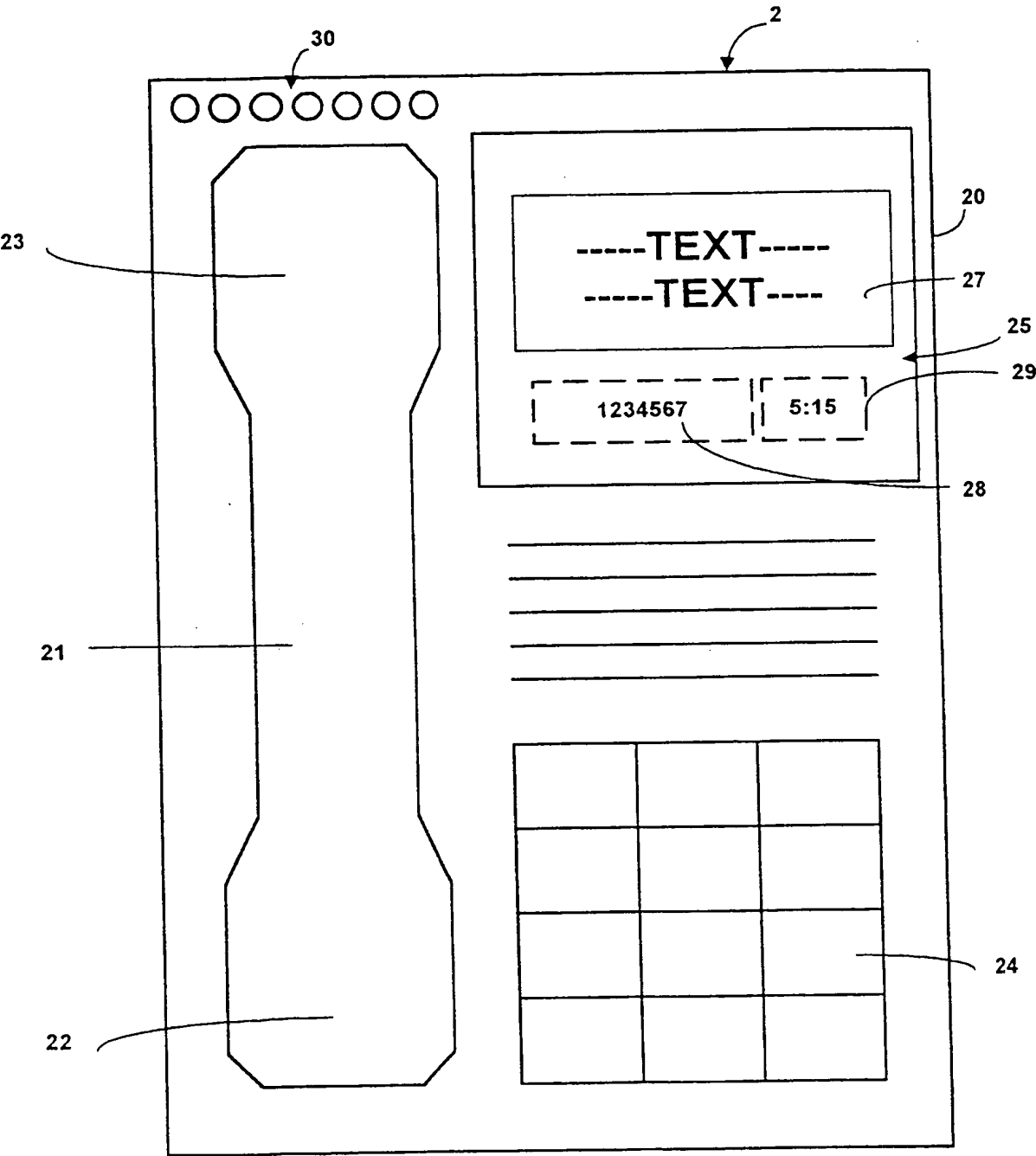


Fig 7



8/22

Fig 8

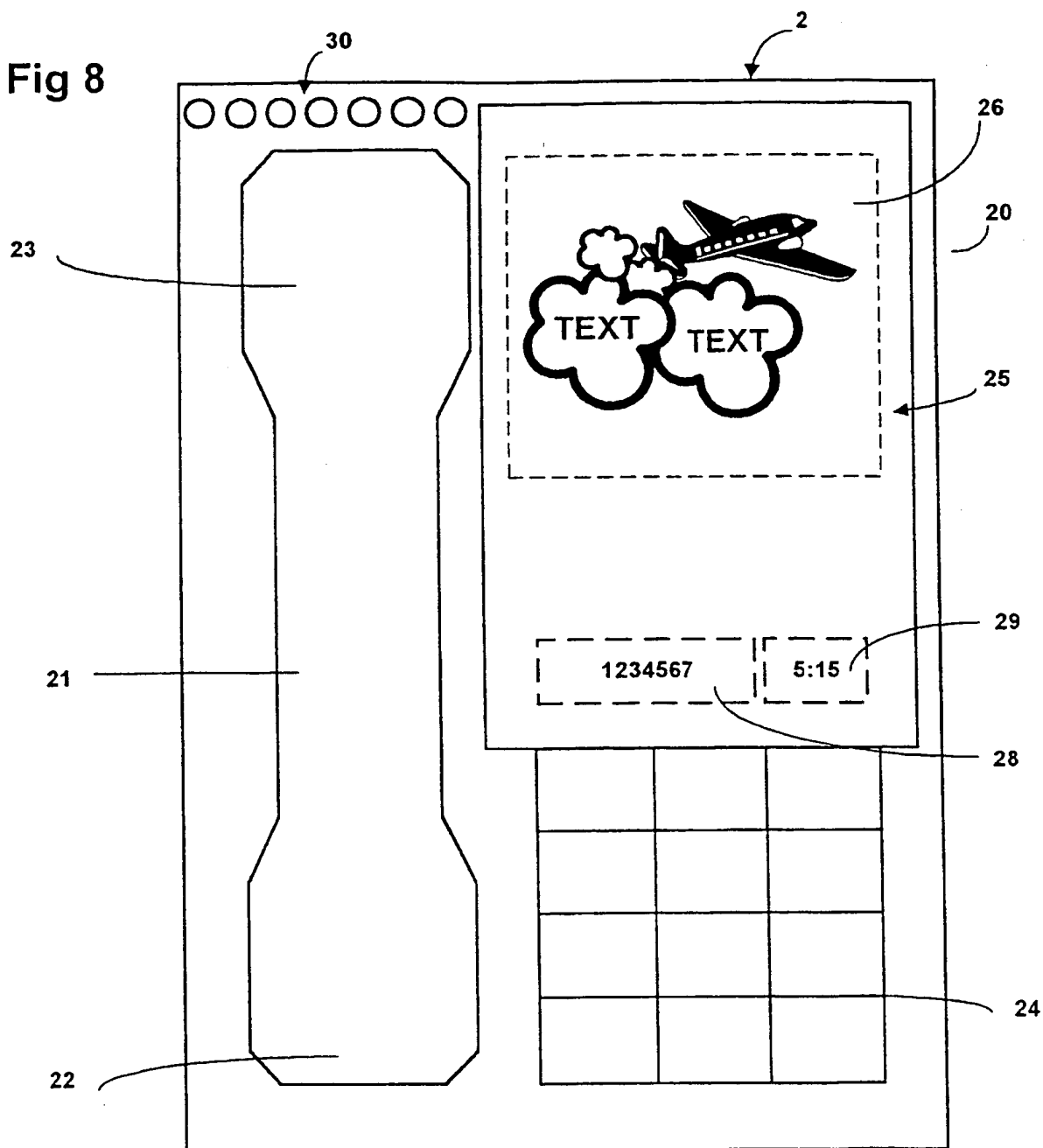
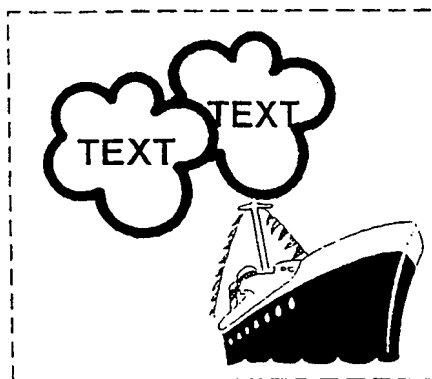
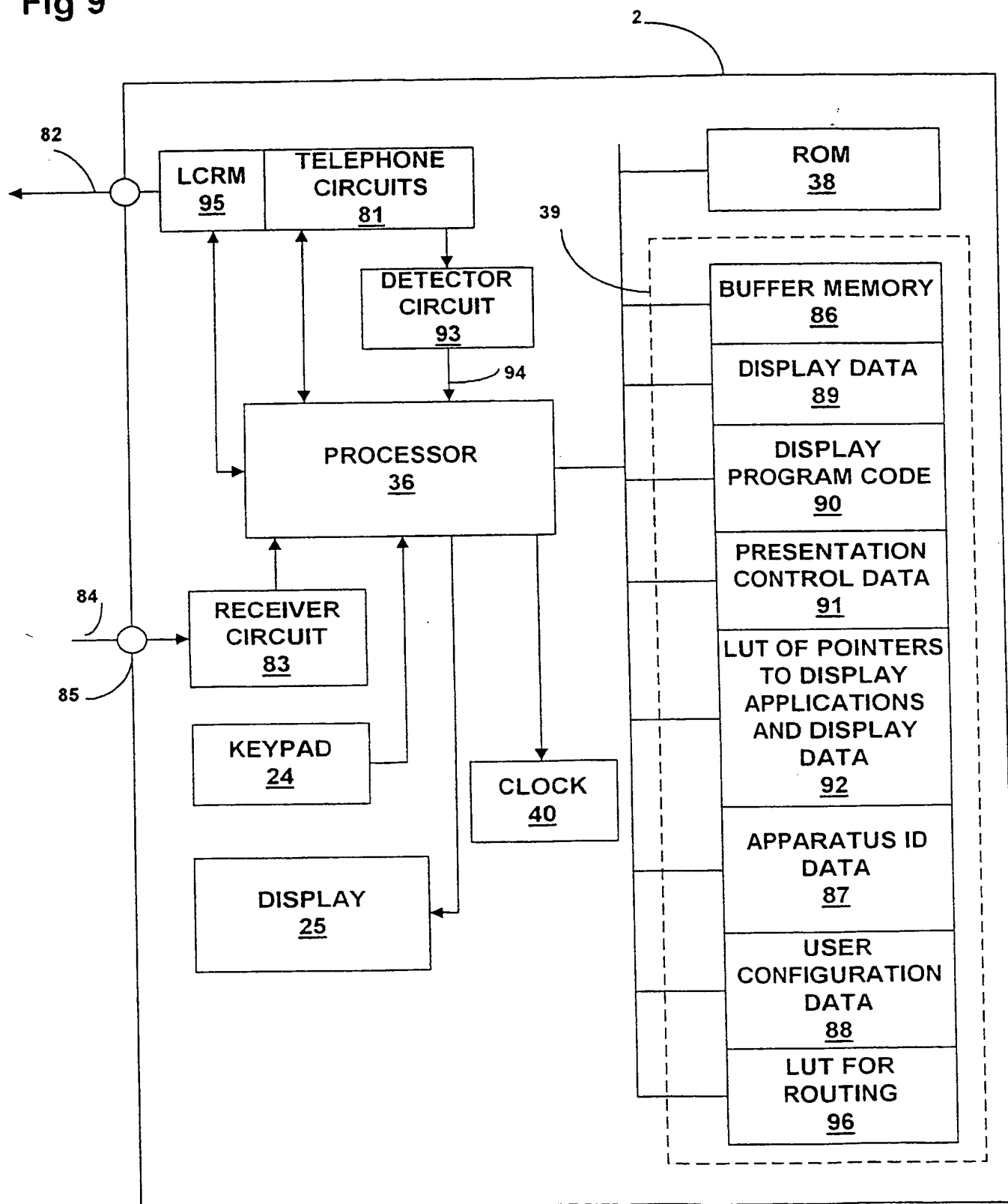


Fig 8A



9/22

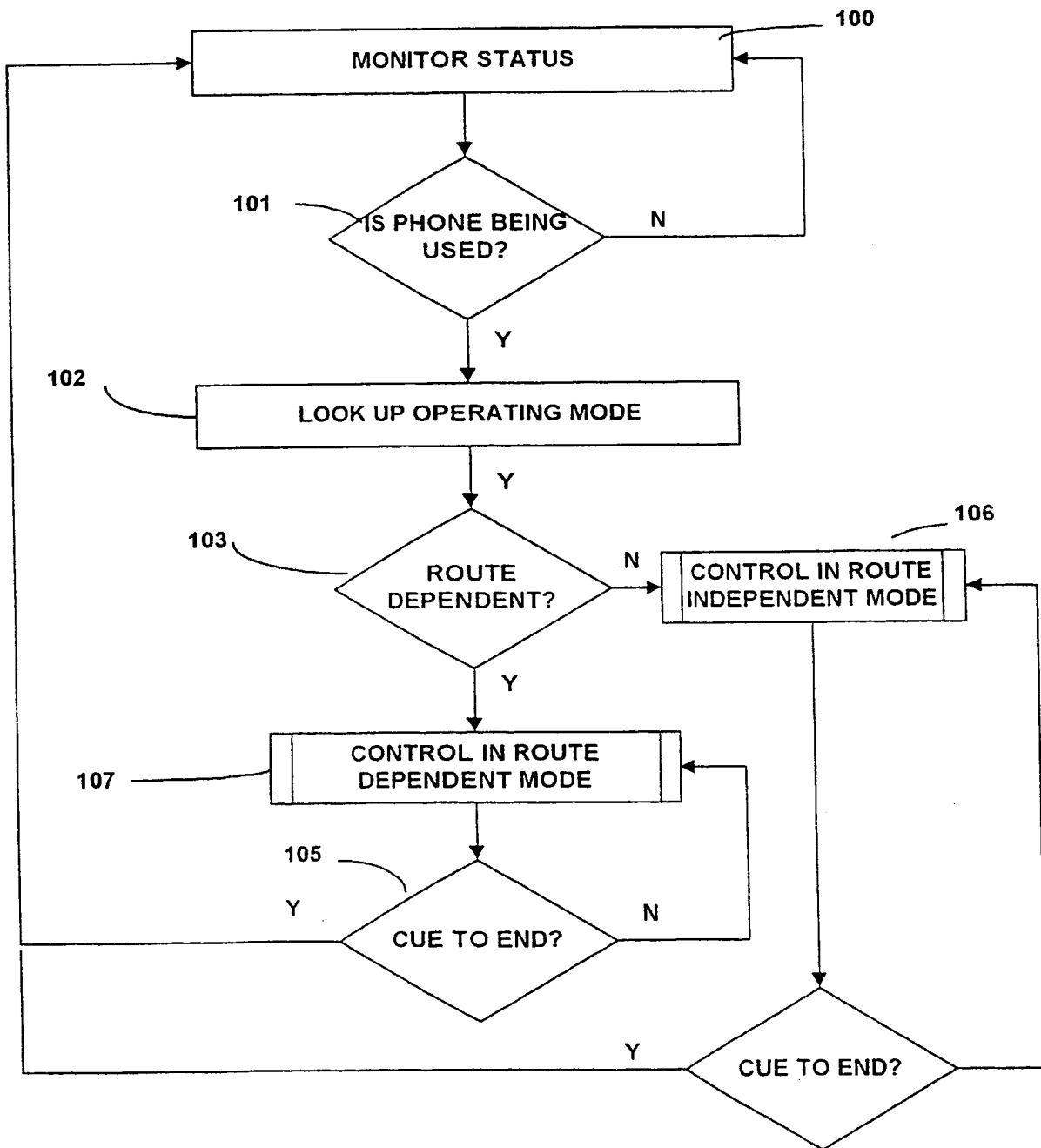
Fig 9



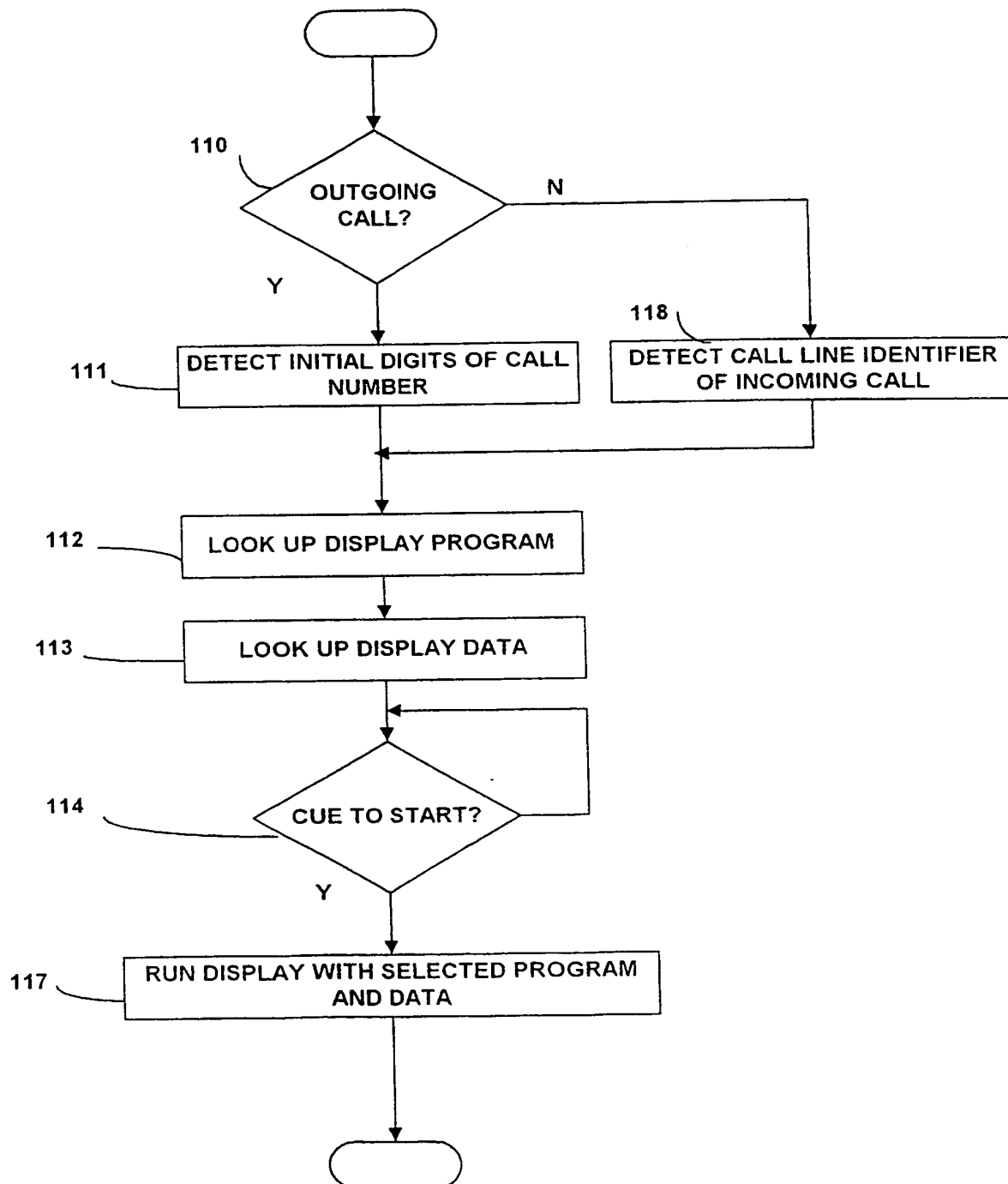
10/22

Fig 10

OVERALL OPERATION FOR PRESENTING A DISPLAY



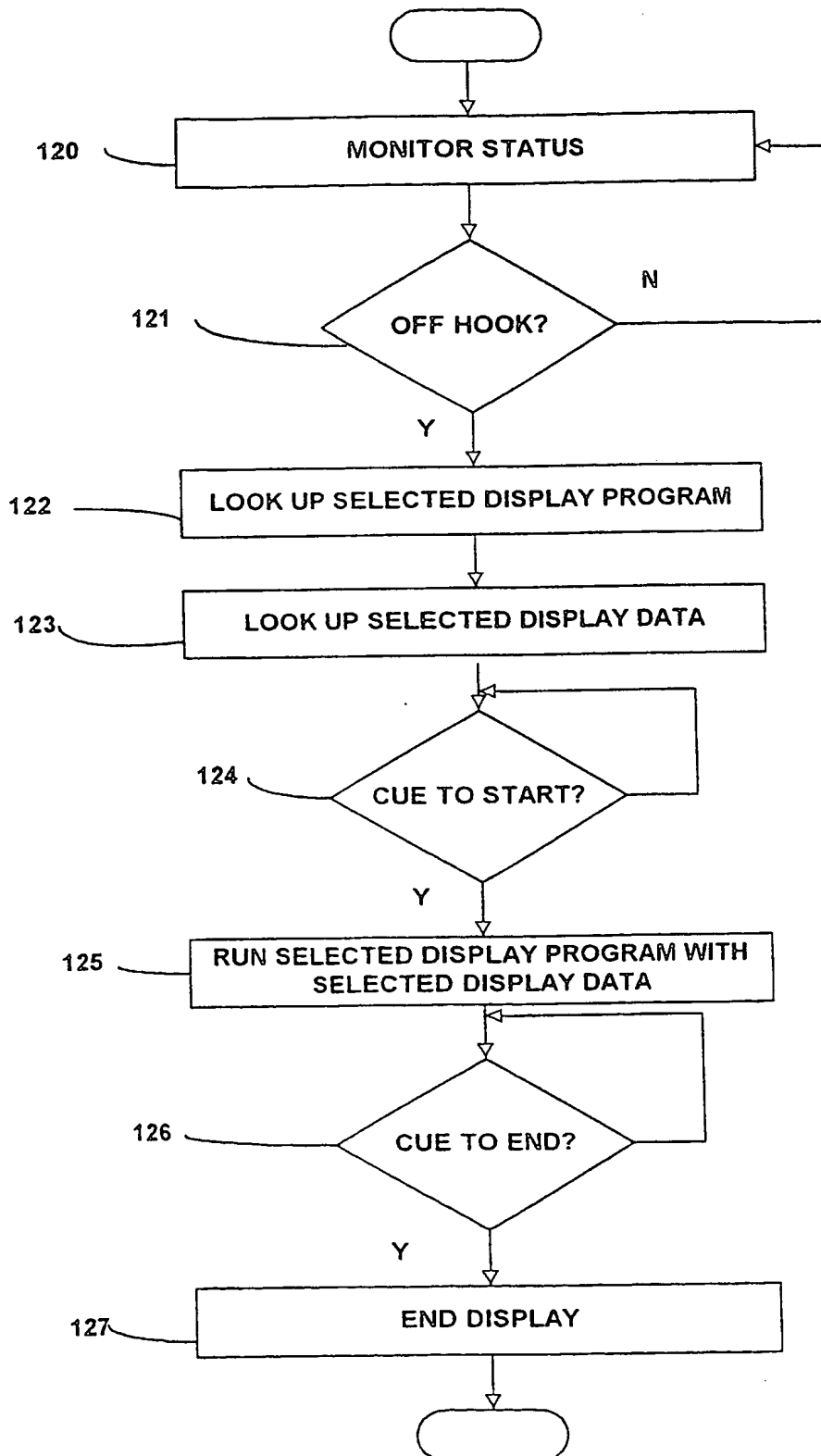
11/22

Fig 11**CONTROL OF DISPLAY IN ROUTE DEPENDENT MODE**

12/22

Fig 12

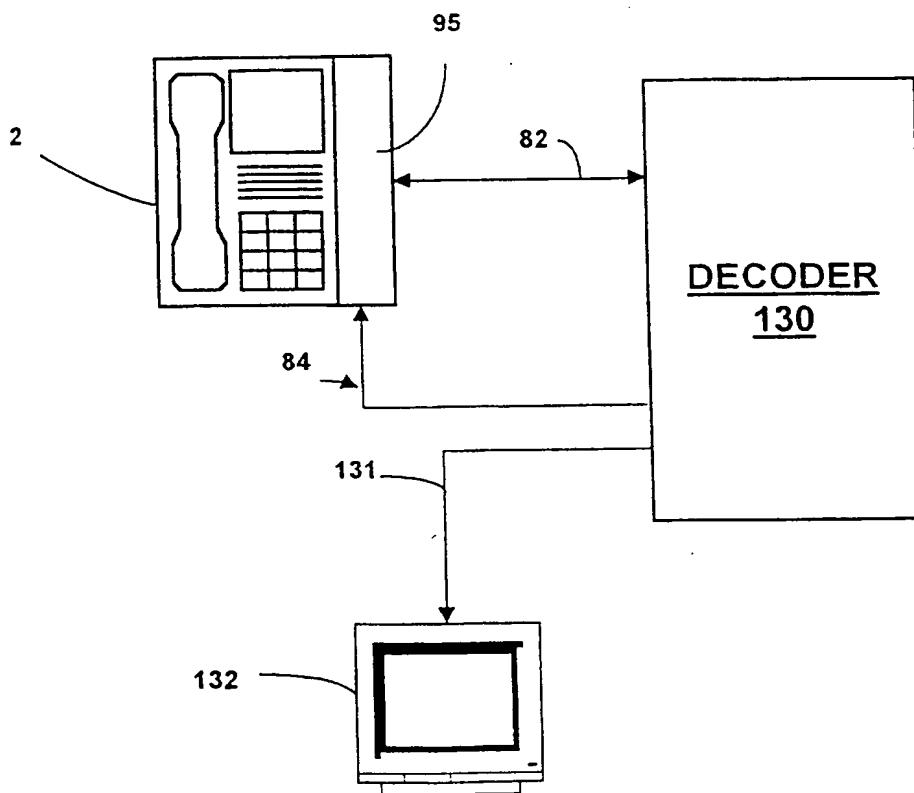
CONTROL OF DISPLAY IN ROUTE INDEPENDENT MODE



13/22

Fig 13

TELEPHONE UPDATE BROADCAST VIA CABLE NETWORK



14/22

Fig 14

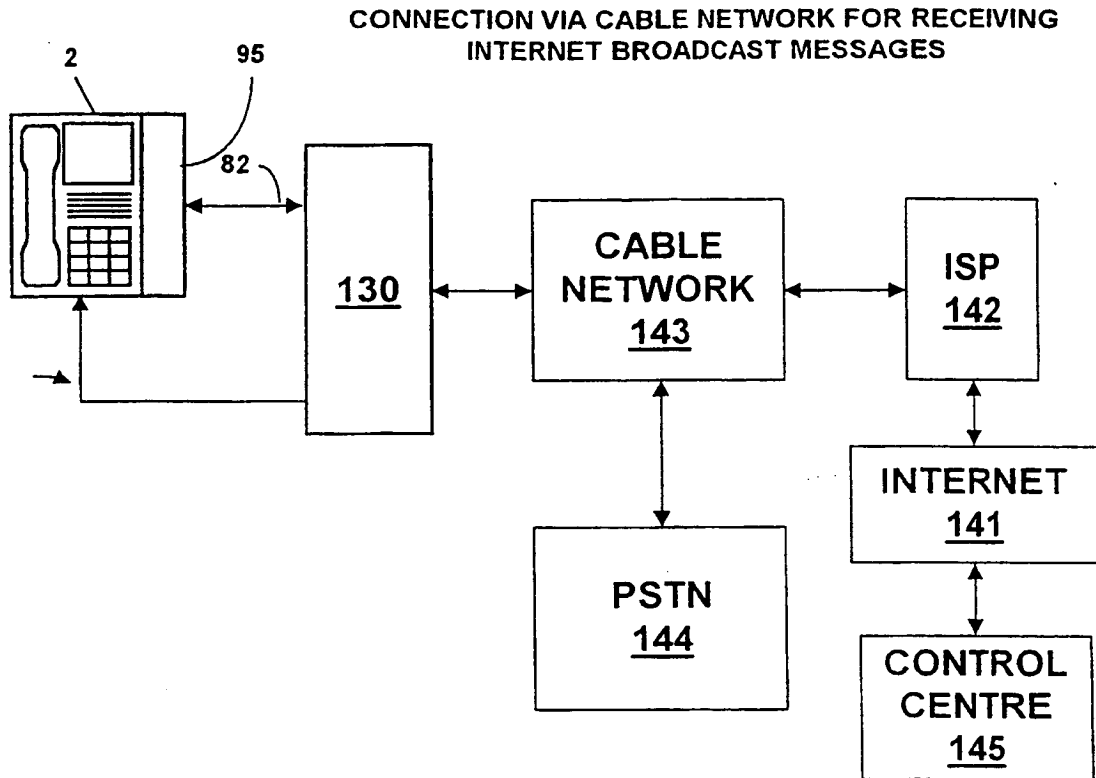
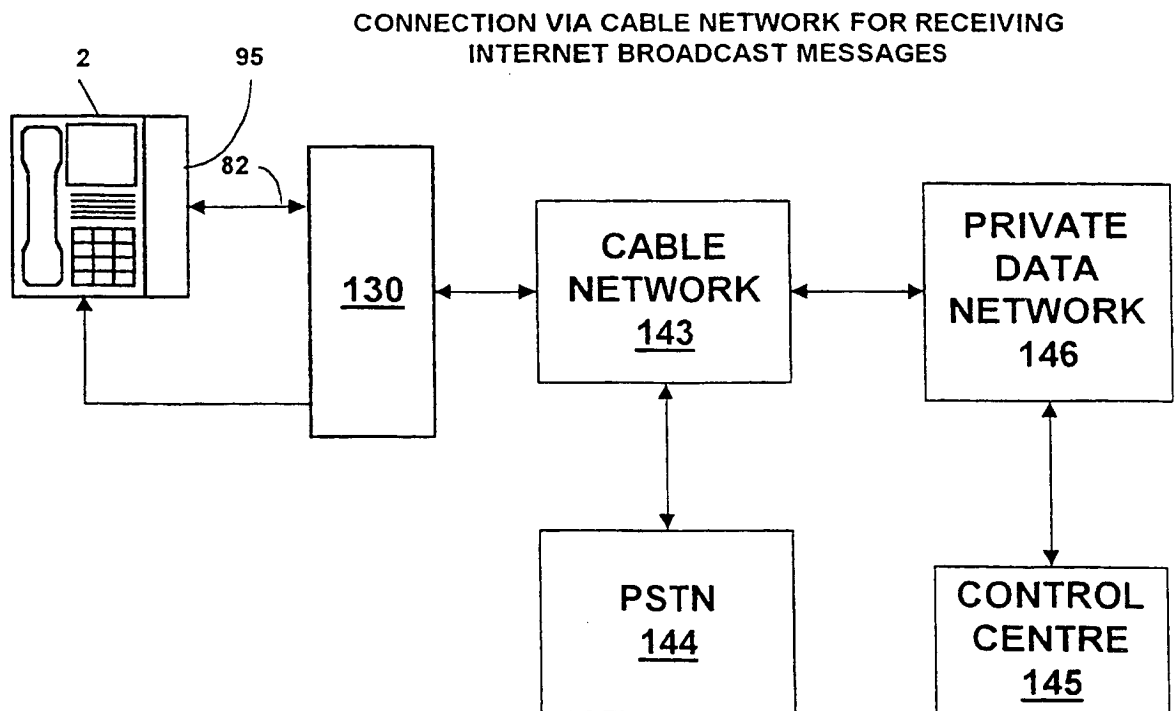
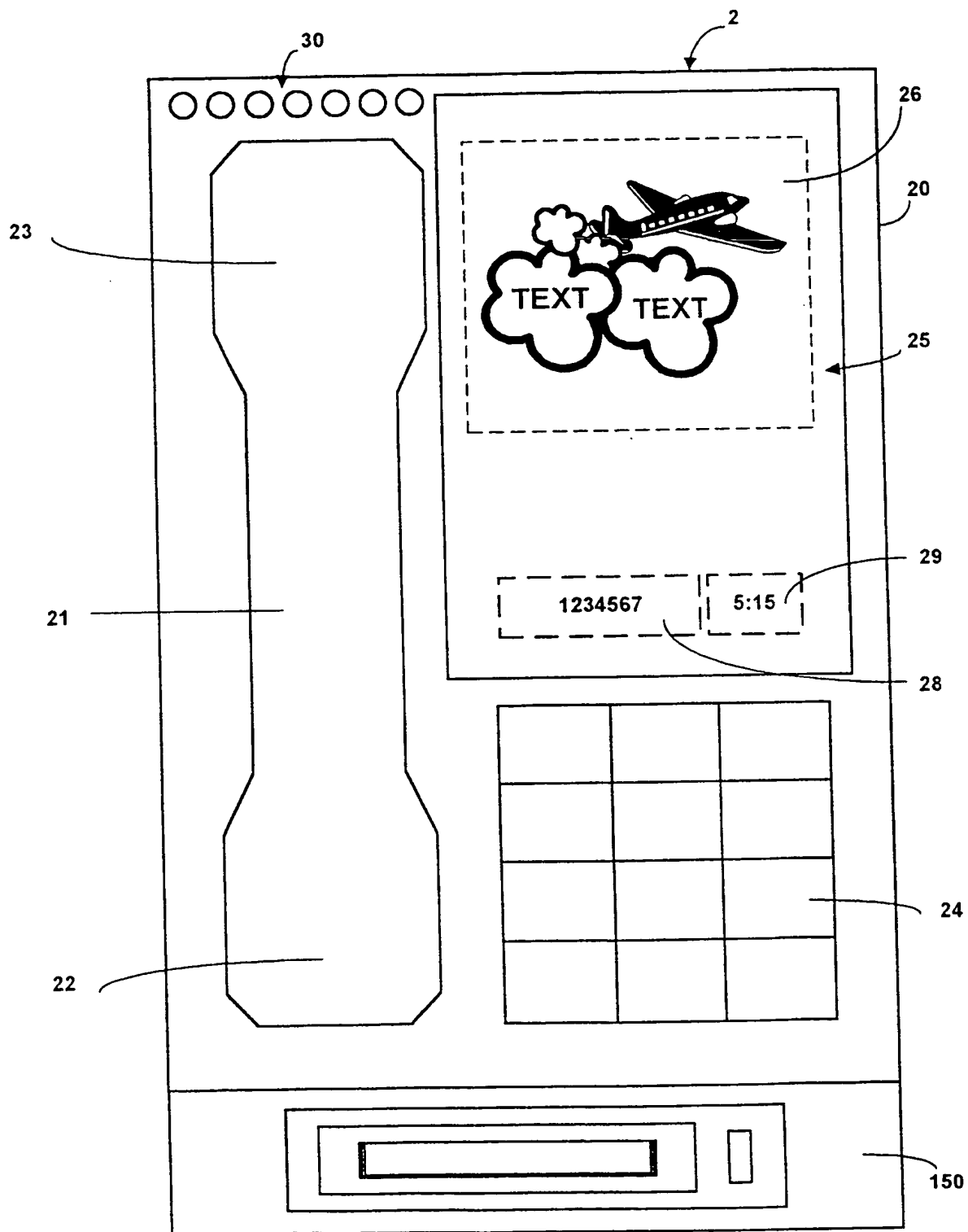


Fig 14A



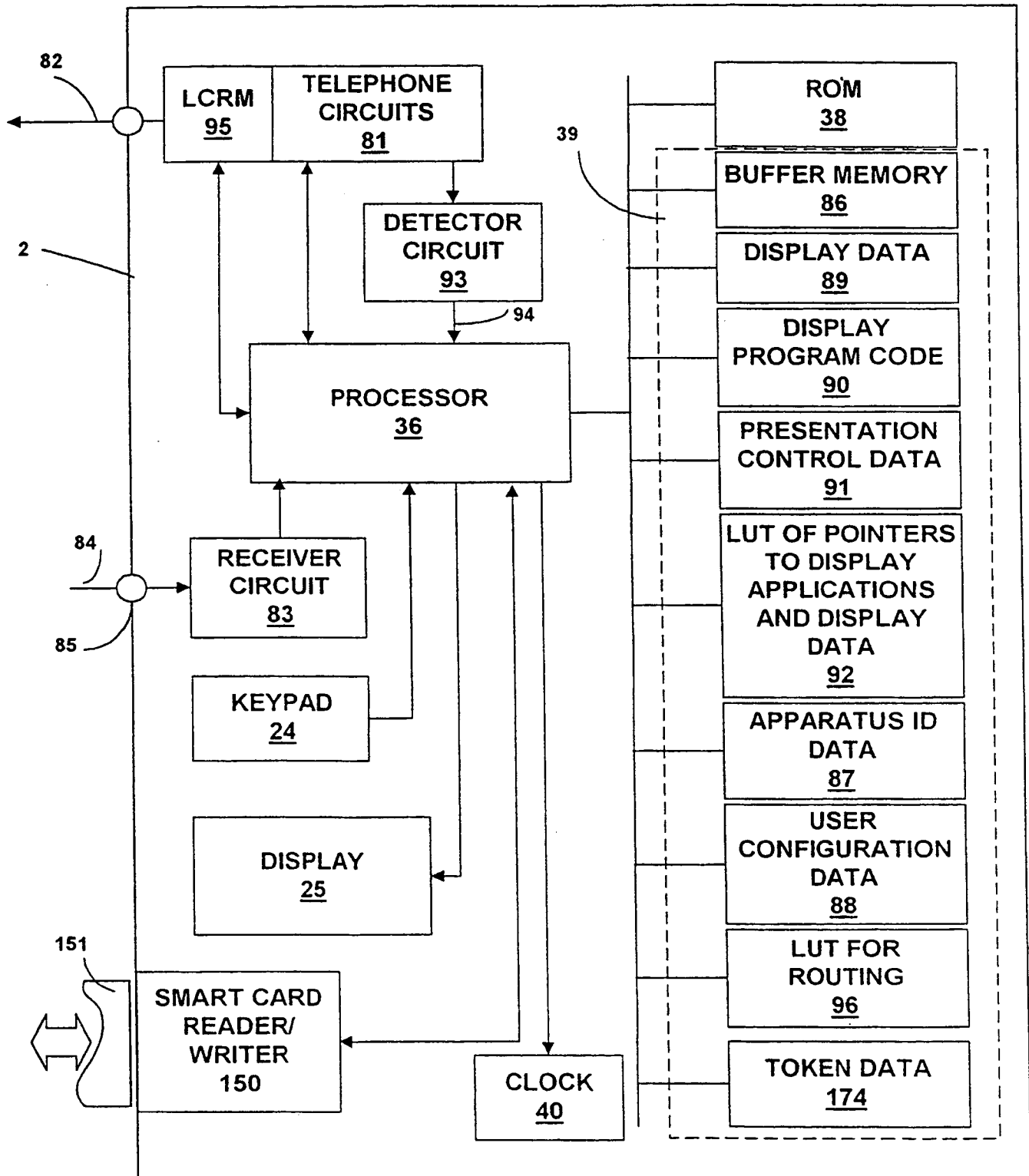
15/22

Fig 15

TELEPHONE WITH ANIMATED DISPLAY AND SMART CARD
READER/WRITER FOR TOKENS

16/22

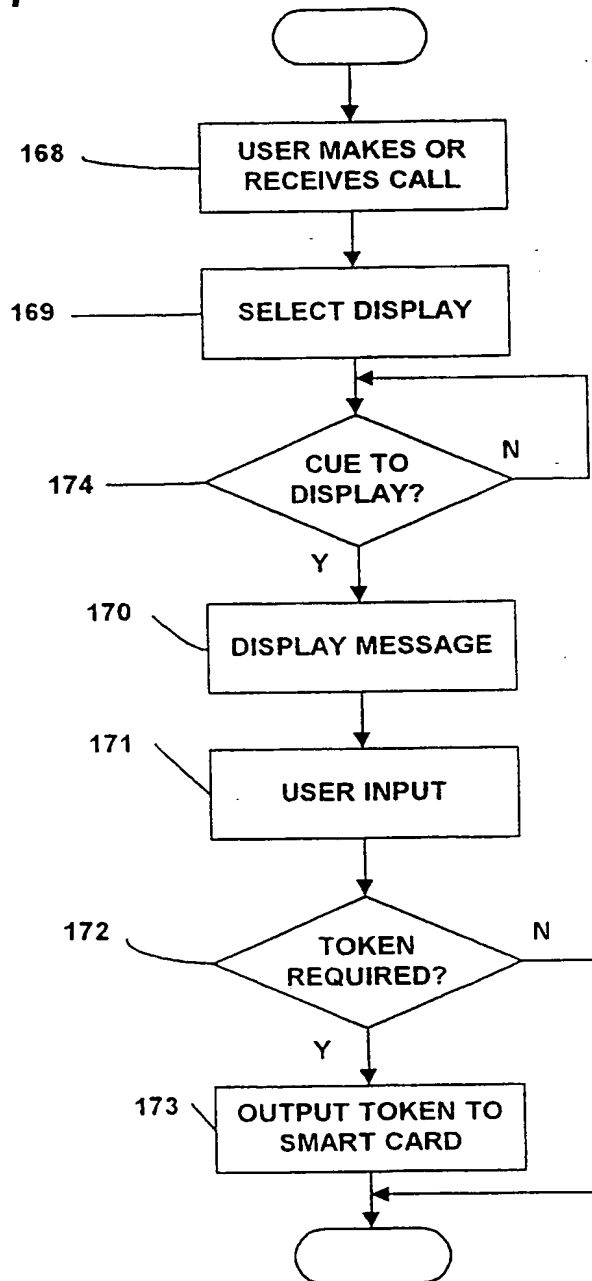
Fig 16

TELEPHONE WITH MEMORY FOR DISPLAY
MESSAGES,LCRM AND SMART CARD TOKENS

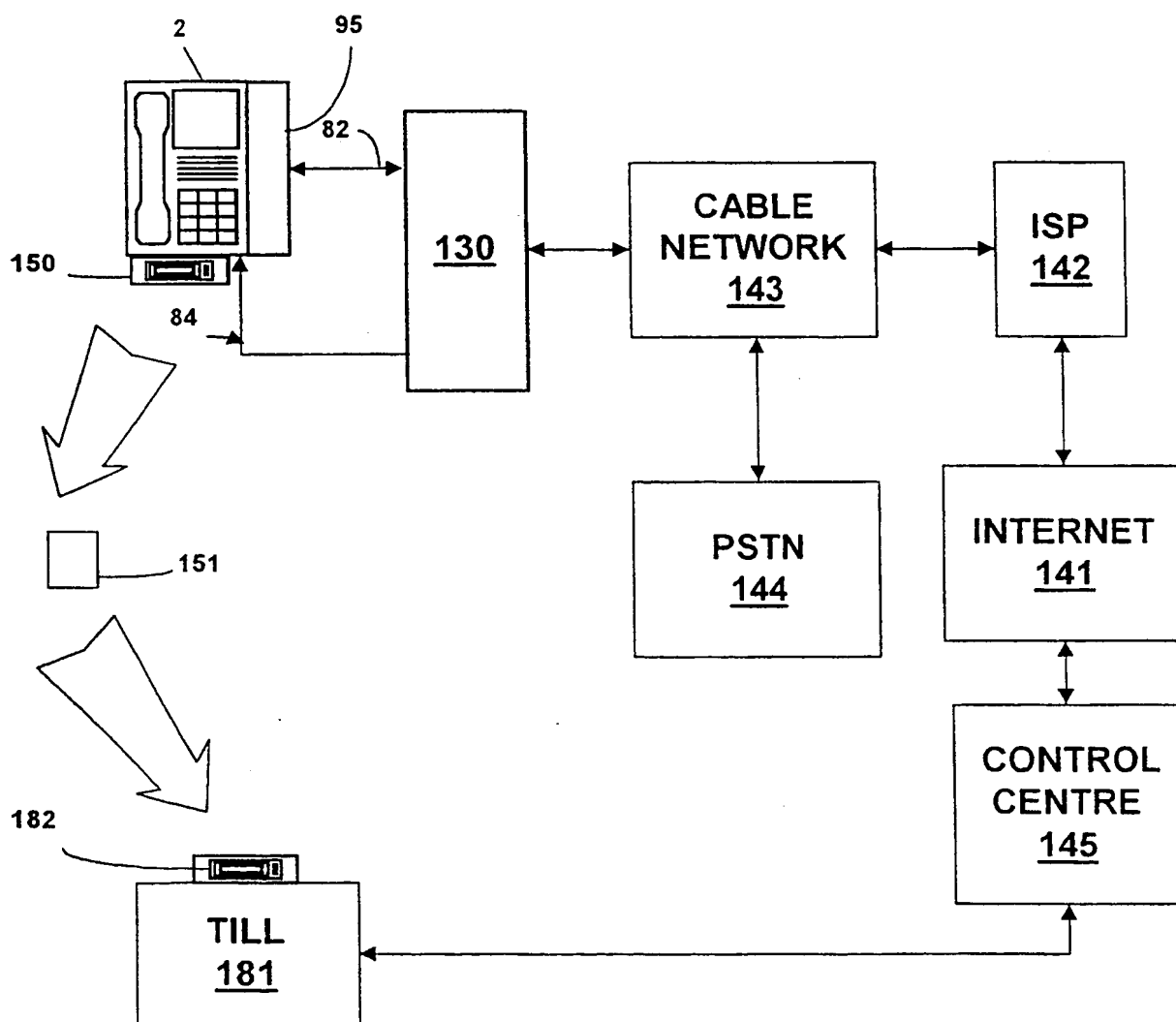
17/22

OUTPUT OF SMART CARD TOKENS

Fig 17



18/22

Fig 18**CONNECTION VIA CABLE NETWORK FOR
MERCHANTIZING TOKEN BROADCAST**

19/22

Fig 19

MOBILE TELEPHONE

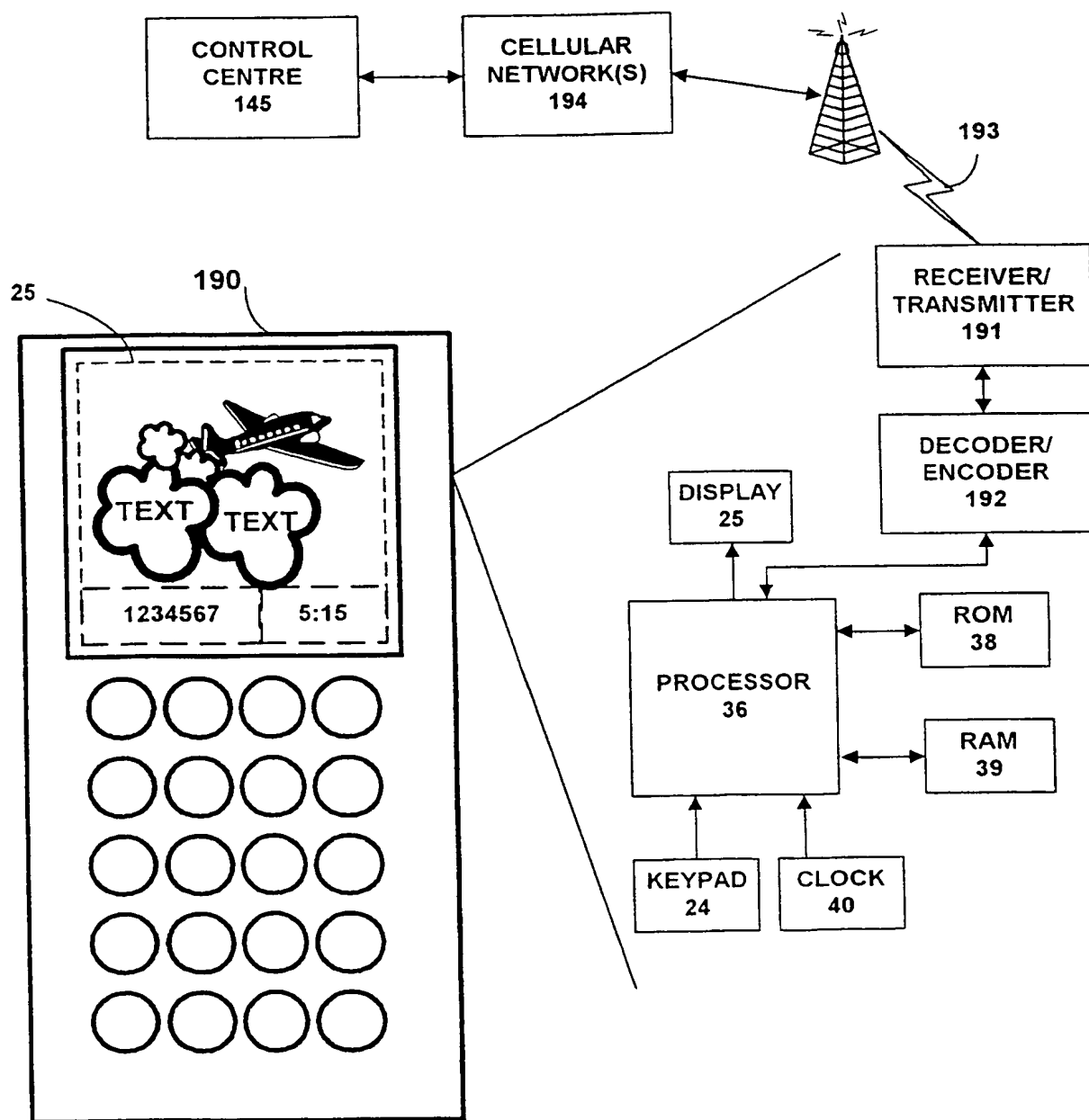
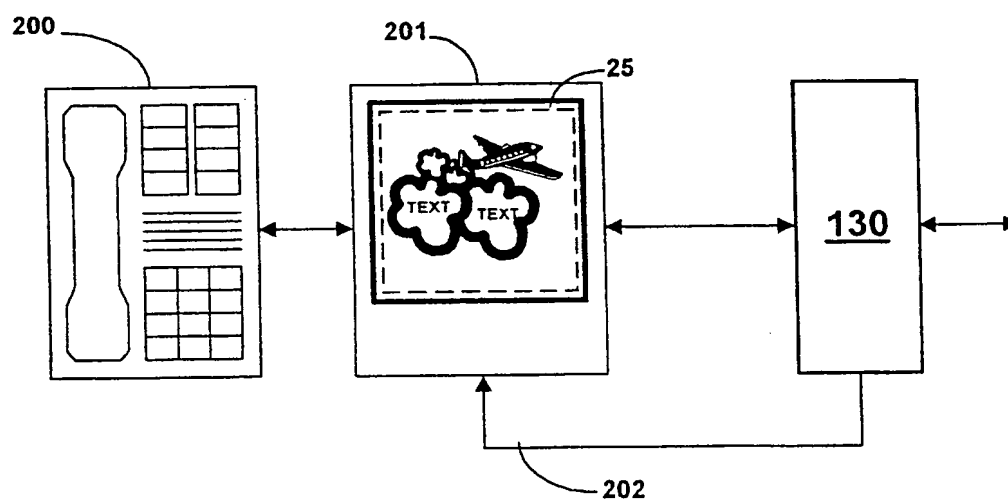


Fig 20

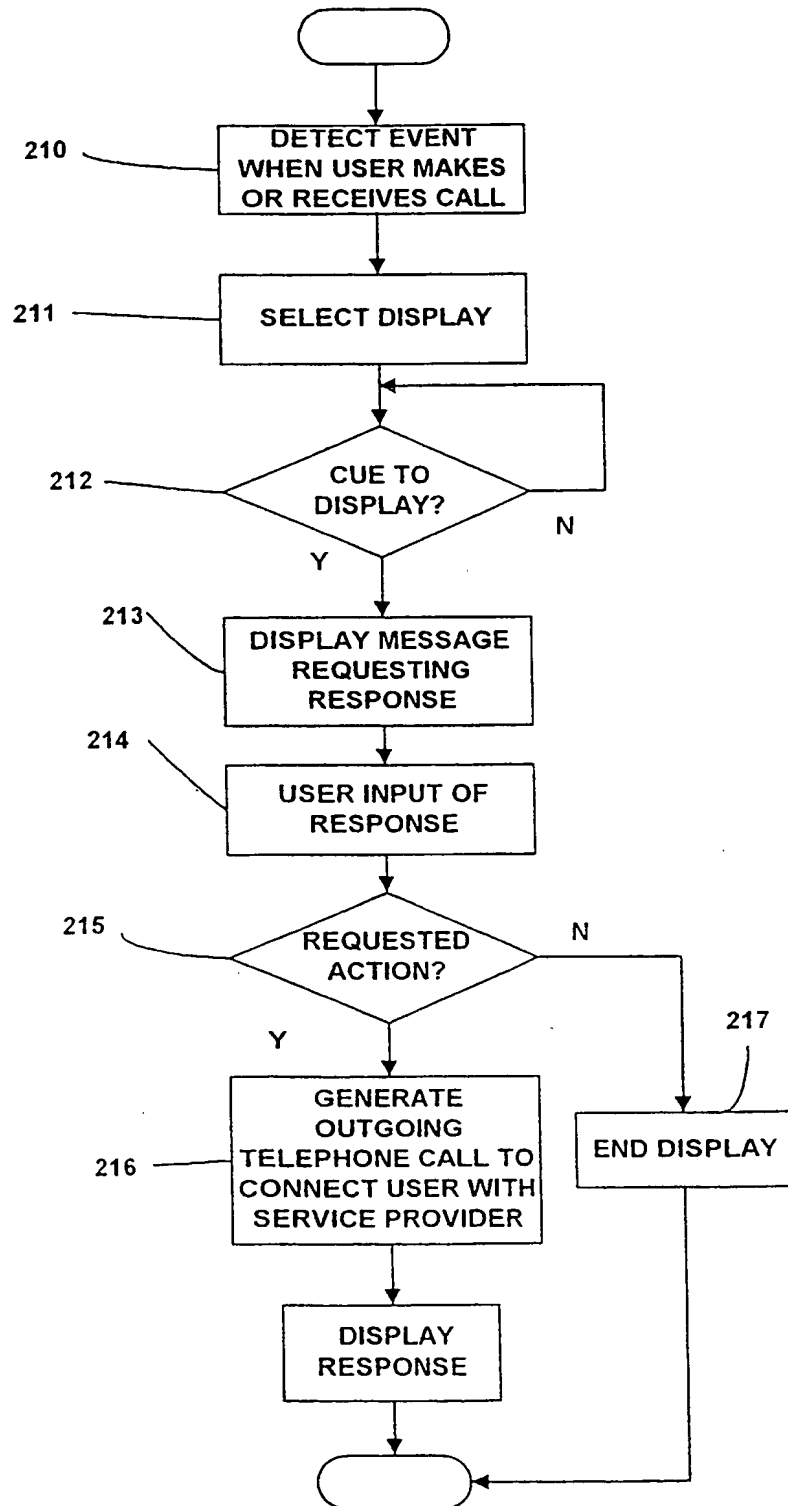
ROUTING MODULE WITH DISPLAY



21/22

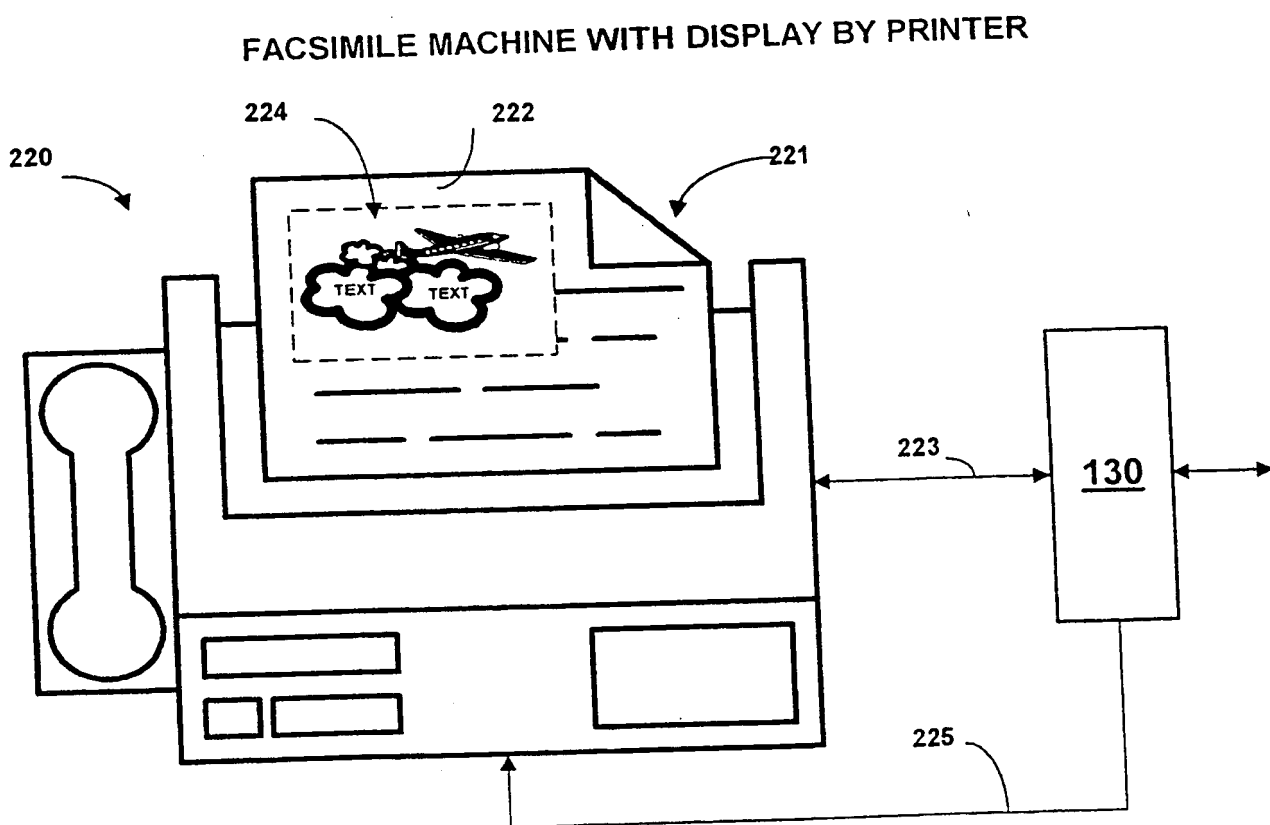
Fig 21

INTERACTIVE DISPLAY



22/22

Fig 22



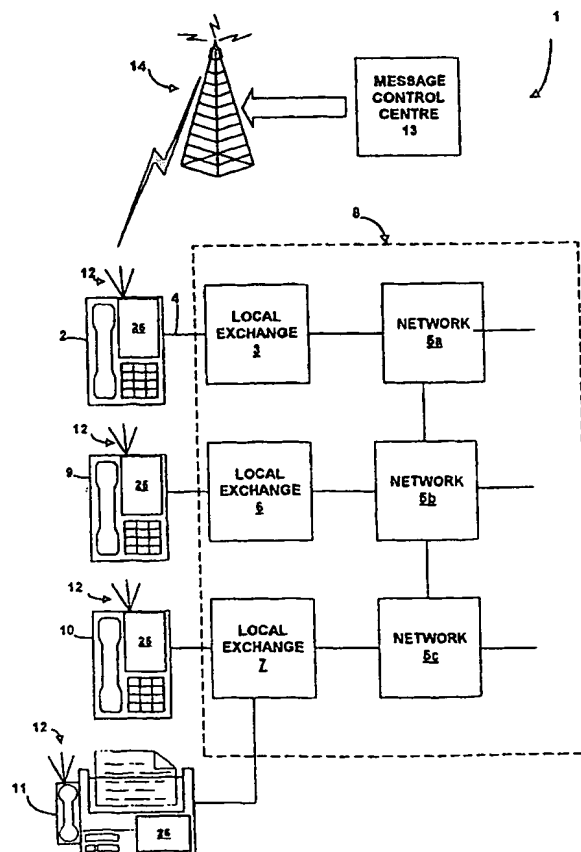


INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification ⁶ : H04M 11/08, 1/00, G07F 7/08	A3	(11) International Publication Number: WO 99/60762 (43) International Publication Date: 25 November 1999 (25.11.99)
(21) International Application Number: PCT/GB99/01578 (22) International Filing Date: 18 May 1999 (18.05.99) (30) Priority Data: 9810989.5 21 May 1998 (21.05.98) GB (71) Applicant (for all designated States except US): PATHFINDER TECHNICAL RESOURCES LIMITED [GB/GB]; Stanley House, Lord Street, Douglas, Isle of Man IM1 2BF (GB). (72) Inventor; and (75) Inventor/Applicant (for US only): DE BEER, Leon [NL/GB]; 48 Walsh Avenue, Warfield, Berkshire RG42 3X7 (GB). (74) Agents: BERESFORD, Keith, Denis, Lewis et al.; Beresford & Co., 2-5 Warwick Court, High Holborn, London WC1R 5DJ (GB).		(81) Designated States: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG). Published <i>With international search report.</i> (88) Date of publication of the international search report: 6 April 2000 (06.04.00)

(54) Title: TELEPHONE APPARATUS WITH MESSAGE DISPLAY**(57) Abstract**

A communications system (1) consists of telephone apparatus including telephones and facsimile machines connected to local exchanges of a public service telephone network (8). Each apparatus (2) is connected to the local exchange by a signal line (4) but also receives broadcast information from a message control centre (13) via radio waves or internet broadcast over a cable network. Each apparatus is provided with a display screen (25) for displaying text and graphic information so that information of interest to the user, such as advertising material, may be broadcast. User specific requirements may be configured into the terminal in the form of identification information which is compared with the identification data of each broadcast message so that only messages having a corresponding identification are stored for subsequent display to the user. The system has use in distributing information to users of telephones and facsimile machines visually to communicate advertising messages and business information.



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INTERNATIONAL SEARCH REPORT

International Application No

PCT/GB 99/01578

A. CLASSIFICATION OF SUBJECT MATTER

IPC 6 H04M11/08 H04M1/00 G07F7/08

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 6 H04M G07F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5 495 517 A (IDE MOTOKI ET AL) 27 February 1996 (1996-02-27)	1,2,4, 19,21, 23,24, 26,40, 41,43, 57,58, 61,76,78
Y	column 2, line 28 -column 3, line 17	35,36, 38,70-72
A		3,5-9, 11-13, 15-18, 26-32, 39,42, 44-47, 50,51, 53-56, 59,62-67
	-/--	



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Patent family members are listed in annex.

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Date of the actual completion of the international search

18 January 2000

Date of mailing of the international search report

31.01.2000

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INTERNATIONAL SEARCH REPORT

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Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 0 344 672 A (ELECTRIC AVENUE INC) 6 December 1989 (1989-12-06) the whole document	76,78
A		1-19, 26-32, 39-56, - 62-67, 73-75
X	WO 97 12479 A (KARLSSON MATS ;TELIGENT AB (SE); HEDLUND NILS (SE)) 3 April 1997 (1997-04-03) the whole document	76-78
A		1-21, 23-32, 35, 39-59, 61-67, 73-75
X	US 5 697 844 A (VON KOHORN HENRY) 16 December 1997 (1997-12-16) column 15, line 6 - line 18 column 15, line 41 - line 50 column 130, line 11 -column 132, line 34	79,81,82
Y		35,36, 38,70-72
A		37,80

INTERNATIONAL SEARCH REPORT

International application No.
PCT/GB 99/01578

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

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because they relate to subject matter not required to be searched by this Authority, namely: —
2. ☐ Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☒ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
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4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☒ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. Claims: 1-78

Telephone apparatus and method for displaying broadcast messages

2. Claims: 79-82

Telephone apparatus and method for receiving broadcast signals representative of redeemable electronic tokens which are stored on a transportable medium

INTERNATIONAL SEARCH REPORT

information on patent family members

International Application No

PCT/GB 99/01578

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
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US 5697844 A	16-12-1997	US 5759101 A US 5508731 A US 5283734 A US 4926255 A US 4745468 A US 5916024 A AU 6137794 A EP 0686334 A WO 9419906 A US 5713795 A US 5227874 A US 5057915 A US 5128752 A US 5034807 A US 4876592 A	02-06-1998 16-04-1996 01-02-1994 15-05-1990 17-05-1988 29-06-1999 14-09-1994 13-12-1995 01-09-1996 03-02-1998 13-07-1994 15-10-1991 07-07-1992 23-07-1991 24-10-1990

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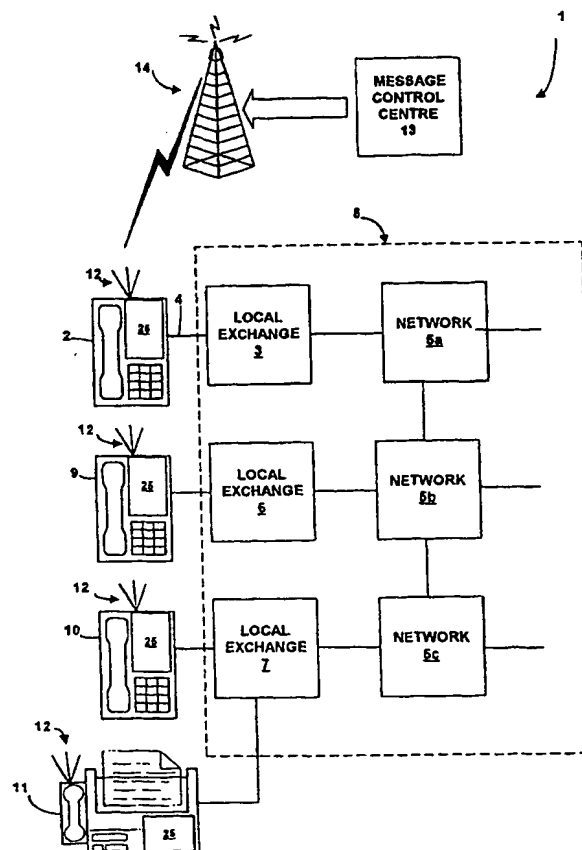
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(51) International Patent Classification ⁶ : H04M 11/08, 1/00, G07F 7/08		A3	(11) International Publication Number: WO 99/60762
			(43) International Publication Date: 25 November 1999 (25.11.99)
(21) International Application Number: PCT/GB99/01578		(81) Designated States: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).	
(22) International Filing Date: 18 May 1999 (18.05.99)			
(30) Priority Data: 9810989.5 21 May 1998 (21.05.98) GB			
(71) Applicant (for all designated States except US): PATHFINDER TECHNICAL RESOURCES LIMITED [GB/GB]; Stanley House, Lord Street, Douglas, Isle of Man IM1 2BF (GB).			
(72) Inventor; and (75) Inventor/Applicant (for US only): DE BEER, Leon [NL/GB]; 48 Walsh Avenue, Warfield, Berkshire RG42 3X7 (GB).		Published With international search report. With amended claims and statement.	
(74) Agents: BERESFORD, Keith, Denis, Lewis et al.; Beresford & Co., 2-5 Warwick Court, High Holborn, London WC1R 5DJ (GB).		(88) Date of publication of the international search report: 6 April 2000 (06.04.00) Date of publication of the amended claims and statement: 11 May 2000 (11.05.00)	

(54) Title: TELEPHONE APPARATUS WITH MESSAGE DISPLAY

(57) Abstract

A communications system (1) consists of telephone apparatus including telephones and facsimile machines connected to local exchanges of a public service telephone network (8). Each apparatus (2) is connected to the local exchange by a signal line (4) but also receives broadcast information from a message control centre (13) via radio waves or internet broadcast over a cable network. Each apparatus is provided with a display screen (25) for displaying text and graphic information so that information of interest to the user, such as advertising material, may be broadcast. User specific requirements may be configured into the terminal in the form of identification information which is compared with the identification data of each broadcast message so that only messages having a corresponding identification are stored for subsequent display to the user. The system has use in distributing information to users of telephones and facsimile machines visually to communicate advertising messages and business information.



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AMENDED CLAIMS

[received by the International Bureau on 4 February 2000 (04.02.00);
original claims 1-82 replaced by new claims 1-104 (22 pages)]

1. Telephone apparatus comprising:

5 (a) communication means (81) operable to make and receive telephone calls for sending and receiving communications signals (82);

(b) display means (25) operable to present a display of information to a user of the communication means;

10 (c) memory means (89,90,91) for storing information to be displayed;

(d) detecting means (93) operable to detect an event associated with use of the communication means;

15 (e) control means (36) operable to control the display means to present the display of the information stored in the memory means to the user in response to said detection by said detection means;

20 (f) receiving means (83) operable to receive broadcast signals (84) other than said communications signals; and

(g) updating means (36) operable to update the information to be displayed stored in the memory means in accordance with the broadcast signals;

characterised in that:

25 (h) the memory means is further operable to store identification information associated with the telephone apparatus;

(i) the updating means comprising a buffer memory for storing received broadcast signals;

30 comparing means (36) operable to compare identification data contained in the broadcast signals stored in the buffer memory with the identification information stored in the memory means; and

storage selecting means (36) operable to select for

storing in said memory means only broadcast signals for which the identification data in the broadcast signals correspond to stored identification information.

5 2. Telephone apparatus as claimed in claim 1 wherein the control means is operable to control operation of the display means by running a display program defined by display program code (90) and which processes display data (89), the program code and the display data being
10 stored in the memory means.

3. Telephone apparatus as claimed in claim 2 wherein the updating means (36) is operable to update the display program code and the display data stored in the memory
15 means in accordance with the broadcast signals.

4. A telephone apparatus as claimed in any preceding claim, wherein the control means is operable to initiate the display of information by the display means in
20 response to detection by said detecting means of the termination of a telephone call by the communication means.

5. A telephone apparatus as claimed in any preceding
25 claim, wherein the control means is operable to initiate the display of information by the display means in response to detection by said detecting means of the commencement of a telephone call by the communication means.

30

6. A telephone apparatus as claimed in any of claims 1 to 3 wherein the control means is operable to initiate the display of information in response to detection by said detection means of a predetermined line status of a

communication channel to which the communication means is connected in use.

7. A telephone apparatus as claimed in any preceding
5 claim comprising a clock (40) and wherein the control means is operable to end the display of information when elapsed time measured by the clock since initiation of the display is equal to a predetermined period.
- 10 8. A telephone apparatus as claimed in claim 3, wherein the receiving means is operable to receive the broadcast signals transmitted by a wireless transmitter.
- 15 9. A telephone apparatus as claimed in claim 8, wherein the receiving means comprises an antenna for receiving wireless transmissions.
- 20 10. A telephone apparatus as claimed in claim 3 wherein the receiving means is operable in use to receive signals from a decoder of a network.
- 25 11. A telephone apparatus as claimed in any preceding claim comprising configuring means (24,36) responsive to user selection and operable to configure the stored identifying information whereby the memory means may selectively be updated with a selected one or more types of information to be displayed.
- 30 12. A telephone apparatus as claimed in claim 11 wherein the configuring means comprises a keypad (24) of the terminal operable in response to user actuation to input configuring data (88) to the storing means.
13. A telephone apparatus as claimed in any preceding

claim wherein the control means is operable to configure the stored identifying information in accordance with configuring data received via said receiving means whereby the memory means may thereafter be selectively
5 updated with a one or more types of information to be displayed selected in accordance with said configuring data.

14. A telephone apparatus as claimed in any preceding
10 claim, wherein the memory means is operable to store presentation control data (91) defining a mode in which the information is displayed, the control means being further operable to control the display means to display the message information in any one of a plurality of
15 modes in dependence upon the presentation control data.

15. A telephone apparatus as claimed in claim 14, wherein the presentation control data determines the timing relative to event detection at which the display
20 of information commences and the duration thereof.

16. A telephone apparatus as claimed in claim 14, wherein the memory means is operable to store presentation control data defining the manner in which
25 alphanumeric data is scrolled.

17. A telephone apparatus as claimed in any preceding claim, wherein the communication means comprises a telephone (81).
30

18. A telephone apparatus as claimed in any of claims 1 to 16, wherein the communication means comprises a facsimile machine (11).

19. A telephone apparatus as claimed in any preceding claim comprising a mobile telephone in which said communication means is operable to send and receive telephone calls by wireless transmission of said communications signals.

20. A telephone apparatus as claimed in any of claims 1 to 18 comprising a call routing module wherein said communication means is operable to prefix dialled telephone numbers from an external device with network selection codes and to output said communication signals including the network selection codes and dialled telephone numbers.

21. A telephone apparatus as claimed in any of claims 17 to 20, wherein the display means comprises a display screen housed integrally with the communication means.

22. A telephone apparatus as claimed in claim 17, wherein the display means is operable to present an audible message via an earpiece speaker (23) of the telephone.

23. A telephone apparatus as claimed in claim 1 comprising printing means for printing images received in said communications signals on a recording medium and wherein said display means is constituted by said printing means, said control means being operable to control said printing means to display the stored information as a printed image.

24. A telephone apparatus as claimed in any preceding claim comprising display selecting means (36,92) operable to select the information to be displayed from stored

information to be displayed.

25. A telephone apparatus as claimed in claim 24 comprising a clock (40) wherein said display selecting
5 means is operable to select information for display in dependence upon at least one of a time of day, a day of the, and a calender event.

26. A telephone apparatus as claimed in claim 24 wherein
10 the memory means stores program code defining a plurality of display programs and display data defining a plurality of messages, the display selecting means (36,92) being operable to select a selected display program and a selected message therefrom to constitute the selected
15 display of information.

27. A telephone apparatus as claimed in any of claims 24 to 26 comprising code detecting means (83) operable to detect a code defining at least part of a telephone
20 number of a telephone call processed by said communication means and wherein the display selecting means is responsive to the detected code to select the selected display of information.

25 28. A telephone apparatus as claimed in claim 27 wherein the display selecting means comprises a look up table (92) for selecting the selected display program and the selected message according to the detected code.

30 29. A telephone apparatus as claimed in claim 28 wherein the detected code is representative of a call line identification defining the origin of a received telephone call.

30. A telephone apparatus as claimed in claim 28 wherein the detected code is representative of a portion of a dialled telephone number responsive to user actuation of input means.

5

31. A telephone apparatus as claimed in any of claims 27 to 30 wherein the memory means stores a decision table (96) defining prefix codes to be added to telephone numbers of outgoing calls and wherein the communication means is operable to prefix user generated dialled numbers with a selected prefix code determined by the control means with reference to the decision table.

32. A telephone apparatus as claimed in claim 31 wherein the code detecting means detects the prefix code determined by the control means with reference to the decision table.

33. A telephone apparatus as claimed in any preceding claim comprising output means for outputting data to a transportable memory medium.

34. A telephone apparatus as claimed in claim 33 wherein the memory means stores token data representative of redeemable electronic tokens and means for transferring electronic tokens to the transportable memory medium.

35. A telephone apparatus as claimed in any of claims 33 and 34 wherein the output means comprises a smart card terminal operable to output electronic tokens to a smart card constituting said transportable memory medium.

36. A telephone apparatus as claimed in any of claims 33 to 35 comprising means for receiving and storing

broadcast signals representative of said token data.

37. A telephone apparatus as claimed in claim 2, wherein the display data comprises at least one of alphanumeric data, speech synthesis data, video data, graphic data and graphic animation data.

38. A method of operating a telephone apparatus comprising:

10 (a) operating a communication means (81) to make and receive telephone calls for sending and receiving communications signals (82);

(b) operating a display means (25) to present a display of information to a user of the communication means;

15 (c) storing information to be displayed in a memory means (89,90,91);

(d) detecting an event associated with use of the communication means;

20 (e) controlling the display means to present the display of the information stored in the memory means to the user in response to said detection;

(f) receiving broadcast signals (84) other than said communications signals; and

25 (g) updating the information to be displayed stored in the memory means in accordance with the broadcast signals;

characterised by:

30 (h) storing identification information associated with the telephone apparatus in the memory means; and wherein the updating step comprises:

storing the received broadcast signals in a buffer memory;

comparing identification data contained in the

broadcast signals stored in the buffer memory with the identification information stored in the memory means; and

5 selecting for storing in said memory means only broadcast signals for which the identification data in the broadcast signals correspond to stored identification information.

10 39. A method as claimed in claim 38 wherein operation of the display means is controlled by running a display program defined by display program code (90) and which processes display data (89), the program code and the display data being stored in the memory means.

15 40. A method as claimed in claim 39 wherein the updating step updates the display program code and the display data stored in the memory means in accordance with the broadcast signals.

20 41. A method as claimed in any of claims 38 to 40, wherein the display means is controlled to initiate the display of information in response to detection of the termination of a telephone call by the communication means.

25 42. A method as claimed in any of claims 38 to 40, wherein the display means is controlled to initiate the display of information in response to detection of the commencement of a telephone call by the communication means.
30

43. A method as claimed in any of claims 38 to 40 wherein the display means is controlled to initiate the display of information in response to detection of a

predetermined line status of a communication channel to which the communication means is connected.

44. A method as claimed in any of claims 38 to 43
5 wherein the display means is controlled to end the display of information when elapsed time since initiation of the display is equal to a predetermined period.

45. A method as claimed in any of claims 38 to 44,
10 wherein the received broadcast signals are signals transmitted by a wireless transmitter.

46. A method as claimed in any of claims 38 to 44,
15 wherein the received broadcast signals are received from a decoder of a network.

47. A method as claimed in any of claims 38 and 46
wherein the received signals are broadcast via one of
(a) the internet;
20 (b) a private data network; and
(c) a cable network.

48. A method as claimed in any of claims 38 to 47
25 comprising configuring the stored identifying information responsive to user selection whereby the memory means is thereafter selectively updated from the broadcast signals with a selected one or more types of information to be displayed.

30 49. A method as claimed in any of claims 38 to 48 wherein the stored identifying information is configured in accordance with configuring data (88) received in said broadcast signals whereby the memory is thereafter selectively updated with one or more types of information

to be displayed selected in accordance with said configuring data.

50. A method as claimed in any of claims 38 to 49,
5 wherein the memory means stores presentation control data (91) defining a mode in which the information is displayed, the display means being controlled to display the message information in any one of a plurality of modes in dependence upon the presentation control data.

10

51. A method as claimed in claim 50, wherein the presentation control data determines the timing relative to event detection at which the display of information commences and the duration thereof.

15

52. A method as claimed in claim 50, wherein the memory means stores presentation control data defining the manner in which alphanumeric data is scrolled.

20

53. A method as claimed in any of claims 38 to 52 wherein said communication means sends and receives telephone calls by wireless transmission of said communications signals.

25

54. A method as claimed in claim 53 wherein the communications signals provide communication via at least one digital cellular network.

30

55. A method as claimed in claim 54 comprising receiving broadcast signals via a channel of said digital cellular network and updating the display program code and the display data stored in the memory means in accordance with the broadcast signals.

56. A method as claimed in any of claims 38 to 55 wherein the communication means comprises a call routing module wherein said communication means prefixes dialled telephone numbers received from an external device with
5 network access codes and outputs said communication signals including the network access codes and dialled telephone numbers.

57. A method as claimed in any of claims 38 to 56,
10 wherein the display means additionally presents an audible message.

58. A method as claimed in any of claims 38 to 57 comprising the step of selecting the information to be
15 displayed from stored information to be displayed providing more than one option for presenting a display of information.

59. A method as claimed in claim 58 wherein the memory
20 means stores program code defining a plurality of display programs and display data defining a plurality of messages, the display selecting step selecting a selected display program and a selected message therefrom to constitute the selected display of information.

25
60. A method as claimed in any of claims 58 and 59 comprising detecting a code defining at least part of a telephone number of a telephone call processed by said communication means and wherein the display selecting
30 step is responsive to the detected code to select the selected display of information.

61. A method as claimed in claim 60 wherein the display selecting step comprises using a look up table (92) to

select the selected display program and the selected message according to the detected code.

5 62. A method as claimed in any of claims 60 and 61 wherein the detected code is representative of a call line identification defining the origin of a received telephone call.

10 63. A method as claimed in any of claims 60 and 61 wherein the detected code is representative of a portion of a user dialled telephone number.

15 64. A method as claimed in any of claims 60 to 63 wherein the memory means stores a decision table (96) defining prefix codes to be added to telephone numbers of outgoing calls and wherein the communication means prefixes user generated dialled numbers with a selected prefix code determined with reference to the decision table.

20

65. A method as claimed in claim 64 wherein the prefix code determined with reference to the decision table is detected to determine the selection of display information.

25

30 66. A method as claimed in any of claims 38 to 65 wherein the display of information comprises code representative of a redeemable token for enabling the user to redeem the token by reference to the code at a retail or service outlet.

67. A method as claimed in any of claims 38 to 65 comprising outputting data representative of redeemable electronic tokens to a transportable memory medium.

68. A method as claimed in claim 67 comprising receiving and storing broadcast signals representative of said token data.

5 69. A method as claimed in any of claims 38 to 68 wherein the displayed information elicits a response from the user, including the further step of receiving a response input from the user and displaying further information responsive to the user response input.

10

70. A method as claimed in claim 69 including the step of generating a communication signal responsive to the user response input.

15 71. A method as claimed in claim 70 wherein the communication signal is generated using a telephone number stored in the memory means in association with the displayed information.

20 72. A method as claimed in claim 38 comprising printing images received in said communications signals on a recording medium and where said display of stored information is constituted by further printing the stored information as a printed image.

25

73. Telephone apparatus comprising;
communication means (81) operable to make and receive telephone calls for sending and receiving communications signals (82);

30 receiving means (83) operable to receive broadcast signals (84) other than said communications signal, said broadcast signals being representative of redeemable electronic tokens;

memory means (174) for storing token data

representative of said redeemable electronic tokens; and
output means for outputting token data
representative of said redeemable electronic tokens to a
transportable memory medium.

5

74. Telephone apparatus as claimed in claim 73 wherein
the output means comprises a smart card terminal.

75. A method of providing discounts on at least one of
10 a product and a service provided at a retail outlet and
service outlet respectively;

the method comprising;

broadcasting redeemable electronic tokens in
broadcast signals to telephone apparatus units having
15 receiving means for receiving the broadcast signals;

storing the tokens in the telephone apparatus units;

transferring the tokens to transportable memory
media inserted into terminals of the telephone apparatus
units;

20 transporting the media to the outlet;

reading the tokens at a terminal of the outlet; and
providing the discounts associated with the tokens.

76. A method as claimed in claim 75 wherein the discount
25 comprises a cash payment.

77. Telephone apparatus comprising:

(a) communication means (81) operable to make and
receive telephone calls for sending and receiving
30 communications signals (82);

(b) display means (25) operable to present a
display of information to a user of the communication
means;

(c) memory means (39) for storing information

(89,90,91) to be displayed and call routing data (96);

(d) detecting means (93) operable to detect an event associated with use of the communication means;

(e) control means (36) operable to control the display means to present the display of the information stored in the memory means to the user in response to said detection by said detection means;

(f) routing means (95) responsive to a dialled telephone number when the communication means is to send a communications signal to prefix the dialled number with a prefix code determined with reference to the call routing data stored in the memory means;

(g) receiving means (83) operable to receive broadcast signals (84) other than the communications signals; and

(h) updating means (36) operable to update the information to be displayed and the call routing data in accordance with respective broadcast signals received via the receiving means.

20

78. A telephone apparatus as claimed in claim 77, wherein the receiving means is operable to receive the broadcast signals transmitted by a wireless transmitter.

25 79. A telephone apparatus as claimed in claim 78, wherein the receiving means comprises an antenna for receiving wireless transmissions.

30 80. A telephone apparatus as claimed in claim 77 wherein the receiving means is operable in use to receive signals from a decoder of a network.

81. A telephone apparatus as claimed in any of claims 77 to 80, wherein the communication means comprises a

telephone (81).

82. A telephone apparatus as claimed in any of claims 77 to 80, wherein the communication means comprises a facsimile machine (11).

83. A telephone apparatus as claimed in any of claims 77 to 80 comprising a mobile telephone in which said communication means is operable to send and receive telephone calls by wireless transmission of said communications signals.

84. A telephone apparatus as claimed in any of claims 78 to 83 wherein the display means comprises a display screen housed integrally with the communication means.

85. A telephone apparatus as claimed in any of claims 78 to 84 wherein the memory means stores a decision table (96) defining the prefix codes to be added to telephone numbers of outgoing calls and wherein the communication means is operable to prefix user generated dialled numbers with a selected prefix code determined by the control means with reference to the decision table.

86. Telephone apparatus comprising:

(a) communication means (81) operable to make and receive telephone calls for sending and receiving communications signals (82);

(b) display means (25) operable to present a display of information to a user of the communication means;

(c) memory means (89,90,91) for storing information to be displayed;

(d) detecting means (93) operable to detect an

event associated with use of the communication means;

(e) control means (36) operable to control the display means to present the display of the information stored in the memory means to the user in response to
5 said detection by said detection means;

characterised by further comprising display selecting means (36,92) operable to select the information to be displayed from stored information to be
10 displayed;

code detecting means (83) operable to detect a code defining at least part of a telephone number of a telephone call processed by said communication means and wherein the display selecting means is responsive to the
15 detected code to select the selected display of information.

87. A telephone apparatus as claimed in claim 86 wherein the display selecting means comprises a look up table
20 (92) for selecting the selected display program and the selected message according to the detected code.

88. A telephone apparatus as claimed in claim 87 wherein the detected code is representative of a call line
25 identification defining the origin of a received telephone call.

89. A telephone apparatus as claimed in claim 87 wherein the detected code is representative of a portion of a
30 dialled telephone number responsive to user actuation of input means.

90. A telephone apparatus as claimed in any of claims 86 to 89 wherein the memory means stores a decision table

(96) defining prefix codes to be added to telephone numbers of outgoing calls and wherein the communication means is operable to prefix user generated dialled numbers with a selected prefix code determined by the control means with reference to the decision table.

91. A telephone apparatus as claimed in claim 90 wherein the code detecting means detects the prefix code determined by the control means with reference to the decision table.

92. Telephone apparatus comprising:

(a) communication means (81) operable to make and receive telephone calls for sending and receiving communications signals (82);

(b) display means (25) operable to present a display of information to a user of the communication means;

(c) memory means (89,90,91) for storing information to be displayed;

(d) detecting means (93) operable to detect an event associated with use of the communication means;

(e) control means (36) operable to control the display means to present the display of the information stored in the memory means to the user in response to said detection by said detection means; and

wherein the memory means is operable to store presentation control data (91) defining a mode in which the information is displayed, the control means being further operable to control the display means to display the message information in any one of a plurality of modes in dependence upon the presentation control data.

93. A telephone apparatus as claimed in claim 92,

wherein the presentation control data determines the timing relative to event detection at which the display of information commences and the duration thereof.

- 5 94. A telephone apparatus as claimed in claim 92, wherein the memory means is operable to store presentation control data defining the manner in which alphanumeric data is scrolled.
- 10 95. A telephone apparatus as claimed in any of claims 92 to 94, wherein the communication means comprises a telephone (81).
- 15 96. A telephone apparatus as claimed in any of claims 92 to 94, wherein the communication means comprises a facsimile machine (11).
- 20 97. A telephone apparatus as claimed in any of claims 92 to 94 comprising a mobile telephone in which said communication means is operable to send and receive telephone calls by wireless transmission of said communications signals.
- 25 98. A telephone apparatus as claimed in any of claims 92 to 97 wherein the display means comprises a display screen housed integrally with the communication means.
- 30 99. Telephone apparatus as claimed in any of claims 92 to 98 wherein the control means is operable to control operation of the display means by running a display program defined by display program code (90) and which processes display data (89), the program code and the display data being stored in the memory means.

100. Telephone apparatus as claimed in claim 99 comprising receiving means (83) operable to receive broadcast signals (84) other than said communications signals and updating means (36) operable to update the display program code and the display data stored in the memory means in accordance with the broadcast signals.

101. A telephone apparatus as claimed in claim 100 comprising means for updating the stored presentation control data with new presentation control data received in the broadcast signals.

102. Telephone apparatus comprising:

(a) communication means (81) operable to make and receive telephone calls for sending and receiving communications signals (82);

(b) display means (25) operable to present a display of information to a user of the communication means;

(c) memory means (89,90,91) for storing information to be displayed;

(d) detecting means (93) operable to detect an event associated with use of the communication means;

(e) control means (36) operable to control the display means to present the display of the information stored in the memory means to the user in response to said detection by said detection means; and further comprising printing means for printing images received in said communications signals on a recording medium and wherein said display means is constituted by said printing means, said control means being operable to control said printing means to display the stored information as a printed image.

103. A telephone apparatus as claimed in claim 102 wherein the communication means comprises a facsimile machine (11).

5 104. A method of operating a telephone apparatus comprising:

(a) operating a communication means (81) to make and receive telephone calls for sending and receiving communications signals (82);

10 (b) operating a display means (25) to present a display of information to a user of the communication means;

(c) storing information to be displayed in a memory means (89,90,91);

15 (d) detecting an event associated with use of the communication means;

(e) controlling the display means to present the display of the information stored in the memory means to the user in response to said detection; and further comprising printing images received in said communications signals on a recording medium and where said display of stored information is constituted by further printing the stored information as a printed image.

25

STATEMENT UNDER ARTICLE 19 (1)

Claim 1 is amended so that new claim 1 comprises the features of existing claims 1, 3, 11 and 15. In incorporating the language of existing claim 3, reference to "information to be displayed" replaces the existing language "display program code and the display data", this being the subject of dependent claim 2.

New claim 2 corresponds to existing claim 2.

New claim 3 corresponds to existing claim 3, amended for consistency with new claim 1.

New claims 4 to 10 correspond to the existing claims of the same number.

New claims 11 to 13 correspond to the existing claims 12 to 14 and new claim 14 corresponds to existing claim 16.

New claim 15 corresponds to existing claim 17 but revised to refer to a telephone apparatus in place of "communications terminal".

New claims 16 to 37 correspond to existing claims 18 to 39.

New claim 38 is revised for consistency with new claim 1 and therefore incorporates the features of existing claim 40, 42 and 50.

New claim 39 corresponds to existing claim 41.

New claim 40 is based on existing claim 42, amended for consistency with new claim 38.

New claims 41 to 47 correspond to existing claims 43 to 49, new claims 48 to 49 correspond to existing claims 51 to 52 and new claims 50 to 71 correspond to existing claims 54 to 75.

New claims 72 to 76 correspond to existing claims 77 to 82.

New claim 77 is an independent claim directed to the subject matter of existing claim 3 in combination with claim 1, additionally referring to the look-up table 96 of Figure 9, described at page 15 line 23 to page 16 line 8.

New claims 78 to 85 correspond to the features of existing claims 8, 9, 10, 19, 20, 21, 23 and 33 respectively.

New claim 86 relates to the features of existing claim 26 and 29 in combination with existing claim 1.

New claims 87 to 91 recite the features of existing claims 30 to 34 respectively.

New claim 92 is directed to the features of existing claim 16 in combination with existing claim 1.

New claims 93 to 100 correspond to the features of existing claims 17 to 23, 2 and 3 respectively.

New claim 101 is newly drafted and directed to the presentation of control data being received in broadcast signals, as disclosed in the description at page 7 lines 22 to 30 with reference to Figure 4.

New claim 102 recites the features of existing claim 25 in combination with the features of existing claim 1.

New claim 103 recites the features of existing claim 20.

New claim 104 recites the features of existing claims 77 and 40 in combination.